Vol. 901 Number 5

OFFICIAL GAZETTE

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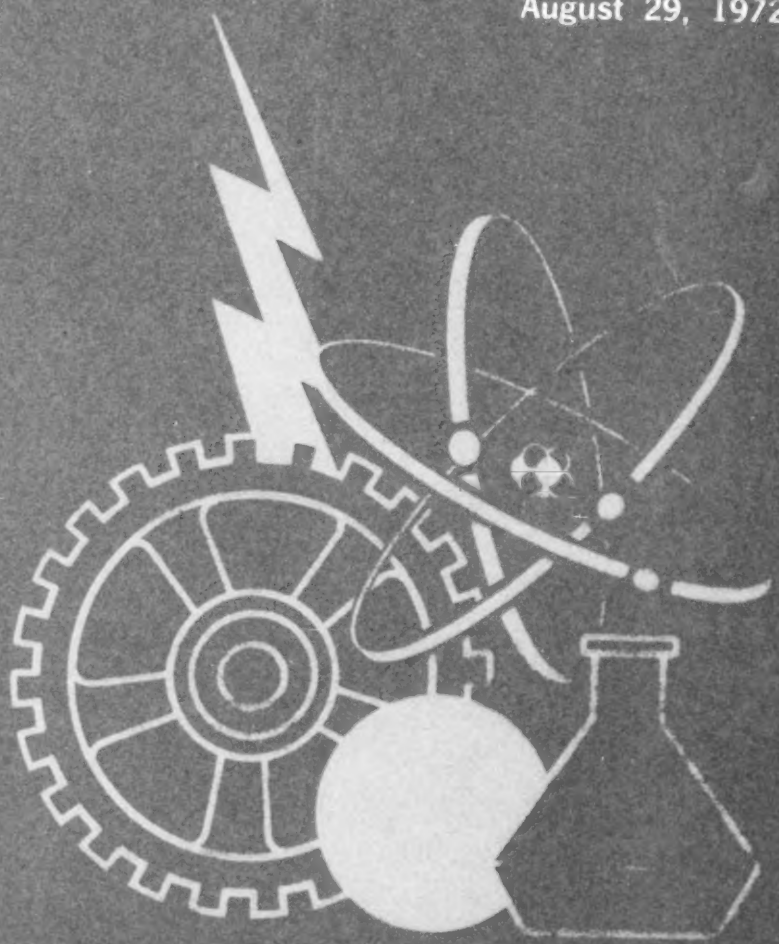
PATENT

August 29, 1972



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OFFICIAL GAZETTE of the UNITED STATES PATENT OFFICE

August 29, 1972 Volume 901 Number 5

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PATENT OFFICE NOTICES

Board of Appeals Decisions Rendered in the Month of July 1972

Examiner affirmed	129
Examiner affirmed in part	17
Examiner reversed	30
Total	176

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WILLIAM I. MERKIN,
Aug. 29, 1972 *Assistant Commissioner for Administration.*

Patent Suits

Notices under 35 U.S.C. 290; Patent Act of 1952

2,698,434, R. D. Davis, BASEBALL CAP; **3,290,693,** L. Wolfe, BASEBALL BATTER'S HELMET, **filed** July 6, 1970, D.C., S.D. Ohio (Cincinnati), Doc. 7564, *American Baseball Cap, Inc.* v. *Wilson Sporting Goods Co.* Judgment and stipulated order, defendant admits ownership of the patents by the plaintiff and infringement by defendant of both patents if valid. Adjudged, claim 1 of Patent No. 2,698,434 was valid. Claim 3 of Patent No. 3,290,693 is invalid, Feb. 7, 1972.

2,700,000, Levi and Hughes, THERMIONIC CATHODE AND METHOD OF MANUFACTURING SAME; **2,700,118,** Hughes, Coppola and Rittner, INCANDESCIBLE CATHODE, **filed** Jan. 17, 1972, U.S. Ct. of Cl., Doc. 22–72, *U.S. Philips Corporation* v. *The United States of America.*

2,700,118. (See 2,700,000.)

2,810,206, H. J. Ziemann, SPIRIT LEVEL; **3,311,990,** E. D. Wright, LEVEL, **filed** May 28, 1969 D.C., N.D. Ill. (Chicago), Doc. 69c1149, *Empire Level Mfg. Co., Harry J. Ziemann, and Donald E. Wright* v. *Ace Hardware Corp.* On stipulation order the above action dismissed without prejudice and without costs with leave to reinstate upon motion of either party, Feb. 18, 1972.

2,831,952, E. L. Warner, COOKING APPARATUS; **3,081,392,** same, HIGH-FREQUENCY OVEN, **filed** Mar. 21, 1972, D.C., N.D. Ohio (Cleveland), Doc. C–72–275, *The Tappan Company* v. *Morris Industries and Pekoo Hardware Co.* **Same, filed** Mar. 16, 1972, D.C., C.D. Calif. (Los Angeles), Doc. 72–597–FW, *Norris Industries, Inc.* v. *The Tappan Company.*

3,081,392. (See 2,831,952.)

3,098,242, Armbruster and Woodcock, WALL-HUNG FIXTURE CARRIER COMBINATION WITH A DEVICE FACILITATING WALL FINISHING, **filed** Mar. 9, 1967, D.C., N.D. Ohio (Cleveland), Doc. C–67–168, *Josam Manufacturing Co.* v. *Zurn Industries, Inc.* Stipulation and order dismissing case with prejudice, Feb. 18, 1972.

3,103,170, Covington, Jr., Daubenspeck, Dickey and Yacko, TUBING FOR CARTRIDGE CASINGS AND THE LIKE AND METHOD OF MAKING THE SAME, **filed** Mar. 27, 1972, D.C., S.D. Ill. (Springfield), Doc. S–C–72–53, *Remington Arms Company, Inc.* v. *Smith & Wesson-Fiocchi, Inc.*

3,122,483, M. W. Rosenthal, STRONTIUM ION TOOTHPASTE, **filed** Feb. 8, 1972, D.C., S.D.N.Y., Doc. 72–C–585, *Block Drug Company, Inc.* v. *Thrifty Cosmetics and Sundries, Inc.* Filed consent judgment, defendant permanently enjoined, Mar. 16, 1972.

3,129,456, L. C. Renfroe, METHOD OF EVISCERATING SCALLOPS, **filed** Oct. 29, 1971, U.S. Ct. of App., 4th Cir., Va. (Richmond), Doc. 71–1998, *Calico Scallop Corp. and Slade Gorton & Co.* v. *Willis Brothers, Inc. and Elmer D. Willis.* Judgment of the District Court affirmed, Apr. 7, 1972.

3,134,732, Kearby, Thorn and Hinlicky, REACTIVATION OF REGENERATED NOVEL METAL CATALYSTS WITH GASEOUS HALOGENS, **filed** Apr. 7, 1972, D.C.N.J. (Newark), Doc. 629–72, *Shell Oil Company* v. *Esso Research and Engineering Company.*

3,140,881, M. Antici, TRAILER HITCH, **filed** July 30, 1969, D.C., N.D. Miss. (Clarksdale), Doc. DC 6941–K, *Marino Antici* v. *The K.B.H. Corporation.* Feb. 4, 1971, by U.S. District Judge W. C. Keady against defendant because of defendant's infringement upon patent. Judgment appealed to Fifth Circuit Court of Appeals on Feb. 19, 1971, judgment of Fifth Circuit issued as mandate on Dec. 29, 1971, affirmed, Jan. 20, 1972.

3,154,240, I. C. Jennings, PUMPING DEVICE, **filed** Oct. 2, 1970, D.C., E.D. Wis (Milwaukee), Doc. 70–C–553, *The Nash Engineering Company* v. *Aqua-Chem, Inc.* Consent judgment, patent is valid. All claims and counterclaims are dismissed. Nash's first cause of action and so much of Nash's second cause of action as relates to the alleged appropriation and use by Aqua-Chem are rendered moot. It is hereby ordered that Aqua-Chem immediately terminate the manufacture, use and sale of liquid ring pumps alleged by Nash in this action to infringe the claims of said Letters Patent. The second cause of action of the amended complaint of Nash, dismissed with prejudice; all counterclaims of Aqua-Chem dismissed with prejudice. Ordered that Aqua-Chem may complete outstanding orders which it has listed in Appendix A. Ordered that Aqua-Chem may not assign or otherwise transfer its obligations under the outstanding orders or proposals listed on Appendix A hereto to anyone including without limitation to any successor to the business or assets of Aqua-Chem. Aqua-Chem will not divulge, sell, or assign or otherwise transfer to anyone, Nash know-how. It is hereby ordered that Aqua-Chem, within 30 days of the entry of this consent judgment, will permit inspection by Nash of the above-mentioned means embodying Nash know-how; any such means not necessary for Aqua-Chem to complete its obligations pursuant to paragraph 3 above shall be delivered to Nash within 60 days of the entry of this consent judgment, Apr. 5, 1972.

3,161,908, P. Walach, HYDRAULIC DOOR CLOSER, **filed** Nov. 10, 1970, D.C., N.D. Ill. (Chicago), Doc. 70c2804, *Monteray Manufacturing Co.* v. *Hartzell Manufacturing, Inc. et al.* Agreement, cause dismissed, with leave to file written stipulation at later date, Mar. 7, 1972.

3,190,159, Wilkie and Cleland, CONTOUR SAWING MACHINE, **filed** Apr. 17, 1972, D.C., W.D. Mich. (Grand Rapids), Doc. G102–72–CA, *Continental Machines, Inc.* v. *Kysor-Johnson Mfg., Div. of Kysor Industrial Corporation.*

3,220,788, P. J. Hunckler, PARTS STORAGE AND MERCHANDISING DEVICE, **filed** Apr. 3, 1972, D.C., N.D. Ohio (Cleveland), Doc. C72–313, *The Lamson & Sessions Co.* v. *Hunckler Products, Inc.*

3,221,707, L. B. Pearson, AUTOMATIC LIVESTOCK HEAD GATE, **filed** Apr. 18, 1972, D.C. Kans. (Wichita), Doc. W–4840, *Laurence B. Pearson* v. *Donald R. Richardson, doing business as Top Hands Products.*

3,241,843, Hatch, Morley and Blair, COMBINED RING AND FRUSTO-CONICAL MEMBER SEAL ASSEMBLY, **filed** Mar. 14, 1972, D.C., N.D. Ill. (Chicago), Doc. 72c658, *Chicago Rawhide Mfg. Co.* v. *Crane Packing Co.*

3,249,270, B. Zuckerman, GARMENT SUPPORT MEANS, **filed** Mar. 31, 1972, D.C., E.D.N.Y. (Brooklyn), Doc. 72–C–419, *Mr. Hanger, Inc.* v. *Cut Rate Plastic Hangers, Inc. et ano.*

3,260,508, E. R. Powell, BALANCING HOIST, **filed** Mar. 31, 1972, D.C., E.D. Mich. (Detroit), Doc. 38085, *D. W. Zimmerman Mfg., Inc.* v. *William H. Nash Co., Inc.*

3,265,092, Ely, Burley and Clement, FEP-FLUOROCARBON TUBING, **filed** Jan. 24, 1972, D.C. Del. (Wilmington), Doc. 4318, transferred from District of South Carolina where the action number was 71–483, *Penntube Plastics Company* v. *Fluorotex, Inc. and Fluorodynamics, Inc.* Stipulation that this action, including complaint and counterclaim, be and hereby is dismissed, without prejudice, Apr. 6, 1972.

3,277,626, Brynjolfsson and Bartlett, DOUBLE SHANK ADJUSTABLE WALL TILE, **filed** Mar. 16, 1972, D.C., E.D.N.Y. (Brooklyn), Doc. 72–C–345, *Genimar, Inc.* v. *Hohmann & Barnard, Inc.*

3,290,693. (See 2,698,434.)

3,311,990. (See 2,810,206.)

D. 203,491, G. H. Jones, WALL-MOUNTED SPHYGMOMANOMETER, **filed** Feb. 11, 1970, D.C., E.D.N.Y. (Brooklyn), Doc. 183, *W. A. Baum Co., Inc.* v. *Propper Manufacturing Co.* Dismissed, Apr. 5, 1972. **Same, filed** May 20, 1972, D.C., E.D.N.Y. (Brooklyn), Doc. 71–C–608, *Propper Mfg. Co.* v. *W. A. Baum Co., Inc.* Defendant's patent adjudged invalid and not infringed, Apr. 13, 1972.

D. 205,225, O. W. Jackson, FISHING LURE, **filed** Apr. 5, 1972, D.C., N.D. Ala. (Birmingham), Doc. 72–306, *Ollie W. Jackson* v. *Fleck, Inc. et al.*

D. 215,250, M. J. Syverson, BEVERAGE DISPENSER, **filed** Apr. 7, 1972, D.C., S.D. Tex. (Houston), Doc. 72–H–461, *Fountain Industries, Inc.* v. *Office Oasis Co., Inc.*

Patent Numbers For Which No Patents Exist

Issue of August 29, 1972

3,686,700	3,687,132	3,687,482	3,687,864
3,686,716	3,687,134	3,687,489	3,687,874
3,686,724	3,687,162	3,687,498	3,687,901
3,686,730	3,687,164	3,687,507	3,687,930
3,686,737	3,687,195	3,687,508	3,687,933
3,686,745	3,687,206	3,687,516	3,687,970
3,686,755	3,687,208	3,687,526	3,687,980
3,686,769	3,687,211	3,687,537	3,687,984
3,686,775	3,687,214	3,687,549	3,687,986
3,686,807	3,687,230	3,687,553	3,688,000
3,686,821	3,687,245	3,687,566	3,688,004
3,686,834	3,687,266	3,687,574	3,688,030
3,686,844	3,687,283	3,687,584	3,688,041
3,686,854	3,687,294	3,687,595	3,688,042
3,686,897	3,687,304	3,687,596	3,688,046
3,686,898	3,687,310	3,687,599	3,688,094
3,686,904	3,687,320	3,687,601	3,688,096
3,686,909	3,687,324	3,687,604	3,688,102
3,686,913	3,687,327	3,687,616	3,688,104
3,686,928	3,687,338	3,687,652	3,688,111
3,686,929	3,687,342	3,687,696	3,688,116
3,686,953	3,687,343	3,687,732	3,688,125
3,686,966	3,687,377	3,687,736	3,688,158
3,686,975	3,687,390	3,687,753	3,688,168
3,686,977	3,687,396	3,687,758	3,688,174
3,686,996	3,687,429	3,687,760	3,688,178
3,687,024	3,687,444	3,687,761	3,688,241
3,687,043	3,687,454	3,687,763	3,688,270
3,687,057	3,687,460	3,687,812	3,688,277
3,687,065	3,687,463	3,687,835	3,688,288
3,687,108	3,687,466	3,687,836	3,688,310
3,687,113	3,687,473	3,687,854	
3,687,126	3,687,474	3,687,861	

Disclaimers

3,197,466.—*Alfred W. Chow*, Merchantville, N.J., and *John R. E. Hoover*, Glenside, Pa. PENICILLIN SULFOXIDES AND PROCESS. Patent dated July 27, 1965. Disclaimer filed July 3, 1972, by the assignee, *Smith Kline & French Laboratories.*

Hereby disclaims the entire terminal part of said patent.

3,608,474.—*Alexander L. Liepa*, Cincinnati, Ohio. APPARATUS FOR PREPARING CHIP-TYPE PRODUCTS. Patent dated Sept. 28, 1971. Disclaimer filed Apr. 2, 1971, by the assignee, *The Procter & Gamble Company.*

Hereby enters this disclaimer to the portion of the term of the patent subsequent to Apr. 27, 1988.

3,660,561.—*Thomas H. Shepherd*, Hopewell, and *Francis E. Gould*, Princeton, N.J. HAIR SPRAY. Patent dated May 2, 1972. Disclaimer filed Jan. 13, 1972, by the assignee, *National Patent Development Corporation.*

Hereby disclaims that portion of the term of the patent subsequent to May 4, 1988.

3,663,292.—*Peter Hershoff*, Leverkusen, *Hans Gref*, Cologne-Stammheim, *Fritz Maus*, Cologne-Flittard, *Willi Wasser*, Leverkusen, *Kurt Browatzki*, Opladen, *Josef Friedsam*, Langenfeld, and *Wolfgang Schweicher*, Leverkusen, Germany. PROCESS FOR COATING STRIP-FORM SUBSTRATES. Patent dated May 16, 1972. Disclaimer filed May 10, 1972, by the assignee, *Agfa-Gevaert Aktiengesellschaft.*

Hereby disclaims all that portion of the term of the patent subsequent to Feb. 29, 1989.

Disclaimers and Dedications

3,335,148.—*Erika Krumkalns*, Indianapolis, Ind. 9(3-PYRIDYL) DERIVATIVE OF FLUORENE, 9-FLUORENOL, XANTHENE, 9-XANTHENOL AND THE CORRESPONDING NONPHYTOTOXIC ACID ADDITION SALTS THEREOF. Patent dated Aug. 8, 1967. Disclaimer and dedication filed May 18, 1972, by the assignee, *Eli Lilly and Company.*

Hereby disclaims claims 1, 2 and 3, all the claims of said patent, and dedicates to the Public the remaining term of said patent.

3,361,753.—*Erika Krumkalns*, Indianapolis, Ind. CERTAIN 9-(3-PYRIDYL)THIOXANTHENE AND THIOXANTHOL DERIVATIVES. Patent dated Jan. 2, 1968. Disclaimer and dedication filed May 18, 1972, by the assignee, *Eli Lilly and Company.*

Hereby disclaims claims 1 and 2, all the claims of said patent and dedicates to the Public the remaining term of said patent.

Certificates of Correction for the Week of Aug. 29, 1972

3,461,264	3,616,480	3,641,276	3,654,596
3,513,203	3,616,602	3,642,336	3,654,743
3,521,987	3,617,000	3,642,345	3,655,263
3,542,370	3,617,698	3,642,468	3,655,480
3,546,233	3,618,670	3,642,488	3,655,576
3,553,723	3,619,009	3,642,537	3,655,756
3,563,147	3,620,528	3,642,767	3,655,765
3,574,359	3,622,578	3,642,810	3,656,245
3,578,298	3,622,910	3,642,860	3,656,851
3,578,452	3,623,553	3,643,342	3,657,380
3,580,855	3,625,413	3,643,379	3,657,857
3,584,347	3,625,552	3,643,796	3,657,924
3,585,550	3,627,245	3,644,169	3,658,042
3,591,321	3,628,626	3,644,415	3,658,439
3,592,591	3,628,799	3,644,419	3,658,494
3,592,809	3,629,705	3,644,439	3,658,669
3,593,029	3,630,904	3,644,886	3,658,706
3,594,214	3,632,226	3,645,034	3,658,751
3,596,063	3,632,510	3,645,811	3,658,784
3,596,184	3,632,813	3,646,220	3,658,849
3,598,985	3,633,105	3,646,588	3,659,014
3,599,042	3,634,123	3,646,893	3,659,104
3,599,088	3,634,441	3,647,261	3,659,146
3,600,101	3,634,825	3,647,333	3,659,162
3,601,655	3,635,080	3,647,791	3,659,327
3,602,792	3,635,440	3,648,060	3,659,508
3,603,172	3,635,544	3,648,382	3,659,868
3,606,419	3,635,761	3,648,441	3,660,511
3,607,355	3,635,842	3,648,447	3,660,649
3,607,859	3,635,941	3,648,534	3,661,408
3,609,262	3,636,047	3,648,547	3,661,506
3,609,399	3,636,375	3,648,796	3,661,872
3,609,416	3,636,826	3,649,173	3,661,963
3,609,600	3,636,836	3,649,188	3,662,147
3,609,610	3,637,074	3,649,256	3,662,564
3,610,710	3,637,108	3,649,300	3,662,845
3,611,019	3,637,377	3,649,516	3,663,562
3,612,029	3,637,378	3,649,550	3,663,594
3,612,053	3,637,496	3,649,593	3,665,331
3,612,081	3,637,524	3,650,442	3,665,870
3,612,913	3,637,743	3,650,641	3,666,390
3,613,510	3,637,837	3,650,704	3,666,735
3,613,551	3,638,074	3,651,089	3,666,810
3,613,702	3,638,134	3,651,316	3,666,890
3,614,226	3,638,169	3,651,510	3,666,986
3,614,624	3,638,905	3,651,536	3,667,449
3,614,746	3,639,787	3,651,931	3,667,523
3,614,769	3,640,141	3,652,644	3,667,868
3,615,531	3,640,268	3,652,784	3,668,115
3,615,535	3,640,344	3,652,980	3,668,452
3,615,582	3,640,694	3,653,805	
3,615,964	3,640,991	3,654,113	
3,616,312	3,641,006	3,654,131	

PATENT EXAMINING CORPS

R. A. WAHL, Assistant Commissioner
WILLIAM FELDMAN, Deputy Assistant Commissioner

CONDITION OF PATENT APPLICATIONS AS OF AUGUST 8, 1972

PATENT EXAMINING GROUPS	Actual Filing Date of Oldest New Case Awaiting Action
CHEMICAL EXAMINING GROUPS	
GENERAL CHEMISTRY AND PETROLEUM CHEMISTRY, GROUP 110—M. STERMAN, Director. Inorganic Compounds; Inorganic Compositions; Organo-Metal and Organo-Metalloid Chemistry; Metallurgy; Metal Stock; Electro Chemistry; Batteries; Hydrocarbons; Mineral Oil Technology; Lubricating Compositions; Gaseous Compositions; Fuel and Igniting Devices.	6-28-71
GENERAL ORGANIC CHEMISTRY, GROUP 120—I. MARCUS, Director. Heterocyclic; Amides; Alkaloids; Azo; Sulfur; Misc. Esters; Carbohydrates; Herbicides; Poisons; Medicines; Cosmetics; Steroids; Oxo and Oxy; Quinones; Acids; Carboxylic Acid Esters; Acid Anhydrides; Acid Halides.	6-01-71
HIGH POLYMER CHEMISTRY, PLASTICS AND MOLDING, GROUP 140—L. J. BERCOVITZ, Director. Synthetic Resins; Rubber; Proteins; Macromolecular Carbohydrates; Mixed Synthetic Resin Compositions; Synthetic Resins With Natural Polymers and Resins; Natural Resins; Reclaiming; Pore-Forming; Compositions (Part) e.g.: Coating; Molding; Ink; Adhesive and Abrading Compositions; Molding, Shaping, and Treating Processes.	8-02-71
COATING AND LAMINATING, BLEACHING, DYEING AND PHOTOGRAPHY, GROUP 160—A. P. KENT, Director. Coating; Processes and Misc. Products; Laminating Methods and Apparatus; Stock Materials; Adhesive Bonding; Special Chemical Manufactures; Special Utility Compositions; Bleaching; Dyeing and Photography.	7-02-71
SPECIALIZED CHEMICAL INDUSTRIES AND CHEMICAL ENGINEERING, GROUP 170—Director (Vacant). Fertilizers; Foods; Fermentation; Analytical Chemistry; Reactors; Sugar and Starch; Paper Making; Glass Manufacture; Gas; Heating and Illuminating; Cleaning Processes; Liquid Purification; Distillation; Preserving; Liquid, Gas, and Solid Separation; Gas and Liquid Contact Apparatus; Refrigeration; Concentrative Evaporators; Mineral Oils Apparatus; Misc. Physical Processes.	3-23-71
ELECTRICAL EXAMINING GROUPS	
INDUSTRIAL ELECTRONICS, PHYSICS AND RELATED ELEMENTS, GROUP 210—N. ANSHER, Director. Generation and Utilization; General Applications; Conversion and Distribution; Heating and Related Art Conductors; Switches; Photography; Motion Pictures; Illumination; Horology; Acoustics; Recorders; Weighing Scales.	12-01-71
SPECIAL LAWS ADMINISTRATION, GROUP 220—R. L. CAMPBELL, Director. Ordnance, Firearms and Ammunition; Radar, Underwater Signalling, Directional Radio, Torpedoes, Seismic Exploring, Radio-Active Batteries; Nuclear Reactors, Powder Metallurgy, Rocket Fuels; Radio-Active Material.	5-25-71
INFORMATION TRANSMISSION, STORAGE AND RETRIEVAL, GROUP 230—J. F. COUCH, Director. Communications; Multiplexing Techniques; Facsimile; Data Processing, Computation and Conversion; Storage Devices and Related Arts.	9-02-71
RECEPTACLES, SANITATION AND CLEANING, WINDING, AND MEASURING, GROUP 240—Director (Vacant). Receptacles; Joint Packing; Conduits; Plumbing Fixtures; Textile Spinning; Food; Agitating; Cleaning; Pressing; Geometrical Instruments; Sound Recording; Winding and Reeling; Measuring and Testing; Indicating.	5-12-71
ELECTRONIC COMPONENT SYSTEMS AND DEVICES, GROUP 250—W. L. CARLSON, Director. Semi-Conductor and Space Discharge Systems and Devices; Electronic Component Circuits; Wave Transmission Lines and Networks; Optics; Radiant Energy; Measuring.	9-20-71
DESIGNS, GROUP 290—R. L. CAMPBELL, Director. Industrial Arts: Household, Personal and Fine Arts.	2-08-71
MECHANICAL EXAMINING GROUPS	
HANDLING AND TRANSPORTING MEDIA, GROUP 310—A. BERLIN, Director. Conveyors; Hoists; Elevators; Article Handling Implements; Store Service; Sheet and Web Feeding; Dispensing; Fluid Sprinkling; Fire Extinguishers; Coin Handling; Check Controlled Apparatus; Classifying and Assorting Solids; Boats; Ships; Aeronautics; Motor and Land Vehicles and Appurtenances; Brakes; Railways and Railway Equipment.	7-19-71
MATERIAL SHAPING, ARTICLE MANUFACTURING, TOOLS, GROUP 320—D. J. STOCKING, Director. Manufacturing Processes, Assembling, Combined Machines, Special Article Making; Metal Deforming; Sheet Metal and Wire Working; Metal Fusion—Bonding, Metal Founding; Metallurgical Apparatus; Plastics Working Apparatus; Plastic Block and Earthenware Apparatus; Machine Tools for Shaping or Dividing; Work and Tool Holders Woodworking; Tools; Cutlery; Jacks.	6-03-71
AMUSEMENT, HUSBANDRY, PERSONAL TREATMENT, INFORMATION, GROUP 330—A. RUEGG, Director. Amusement and Exercising Devices; Projectors; Animal and Plant Husbandry; Butchering; Earth Working and Excavating; Fishing, etc.; Tobacco; Artificial Body Members; Dentistry; Jewelry; Surgery; Toiletry; Printing; Typewriters; Stationery; Information Dissemination.	8-03-71
HEAT, POWER, AND FLUID ENGINEERING, GROUP 340—M. M. NEWMAN, Director. Power Plants; Combustion Engines; Fluid Motors; Reaction Motors; Pumps; Rotary Engines and Pumps; Heat Generation and Exchange; Refrigeration; Ventilation; Drying; Temperature and Humidity Regulation; Machine Elements; Couplings; Gearing; Bearings; Clutches; Power Transmission; Fluid Handling and Control; Lubrication.	7-22-71
MISCELLANEOUS CONSTRUCTIONS, TEXTILES AND MINING, GROUP 350—T. J. HICKEY, Director. Joints; Fasteners; Rod, Pipe and Electrical Connectors; Miscellaneous Hardware; Locks; Building Structures; Closure Operators; Bridges; Closures; Earth Engineering; Drilling; Mining; Furniture; Supports; Cabinet Structures; Centrifugal Separations; Coating; Textiles; Apparel and Shoes; Sewing Machines.	6-25-71

Expiration of patents: The patents within the range of numbers indicated below expire during August 1972, except those which may have expired earlier due to shortened terms under the provisions of Public Law 690, 79th Congress, approved August 8, 1946 (60 Stat. 940) and Public Law 619, 83rd Congress, approved August 23, 1954 (68 Stat. 764), or which may have had their terms curtailed by disclaimer under the provisions of 35 U.S.C. 253. Other patents, issued after the dates of the range of numbers indicated below, may have expired before the full term of 17 years for the same reasons, or have lapsed under the provisions of 35 U.S.C. 151.

Patents..... Numbers 2,714,207 to 2,716,747, inclusive
Plant Patents..... Numbers 1,408 to 1,416, inclusive

PATENTS

GRANTED AUGUST 29, 1972

GENERAL AND MECHANICAL

3,686,689

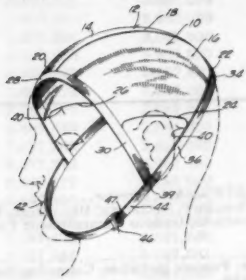
WATER SKI SAFETY CAP

Anton Berlinski, and Ruth R. Berlinski, both of 1553 S. 26 St., Milwaukee, Wis.

Filed Nov. 12, 1970, Ser. No. 88,793

Int. Cl. A41d *13/00*

U.S. Cl. 2—2 **2 Claims**



A safety cap for water skiers comprises a crown portion of limited arcuate span constructed of a brightly colored flexible material which is secured to the head of a water skier by forward and rear elastic bands which extend from the crown portion and intersect at points spaced below the side edges of the crown portion to define ear openings. The rear elastic band extends forwardly from the intersection to form a chin strap which rigidly secures the cap to the head of the wearer to avoid translatory displacement or loss of the hat as a result of a spill. The bright color can easily be seen by motor boat operators.

3,686,690

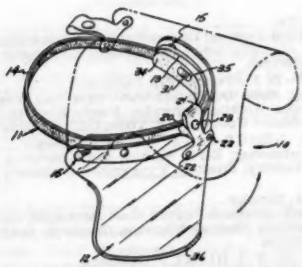
FACE SHIELD

Daniel D. Webb, Birmingham, Mich., assignor to American Safety Equipment Corporation of Michigan, Detroit, Mich.

Continuation-in-part of Ser. No. 651,476, July 6, 1967, abandoned. This application Nov. 19, 1968, Ser. No. 786,795

Int. Cl. A42b *1/08*

U.S. Cl. 2—9 **2 Claims**



A transparent, protective face shield, having a relatively stiff headband portion to which the upper, opposite ends of a flexible, transparent sheet are pivotally secured, and the upper center of the sheet is releasably secured by a snap fastener mounted upon a flexible strap, the strap serving as a quick release handle.

3,686,691

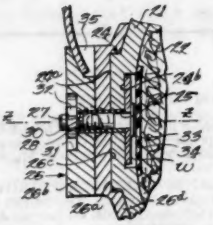
EAR-PROTECTING DEVICE

Marshall N. Anderson, Grayslake, Ill., assignor to Selstrom Manufacturing company, Palatine, Ill.

Filed Aug. 26, 1970, Ser. No. 66,927

Int. Cl. A41d *21/00*

U.S. Cl. 2—209 **7 Claims**



An ear-protecting device is provided which is mounted so as to be substantially self-adjusting and thus, conform substantially to the portion of the head of the wearer which is circumjacent the accommodated ear. The device includes a supporting arm and an ear-acommodating unit which is connected thereto and is adjustable about a plurality of angularly disposed axes.

3,686,692

MEANS FOR STIFFENING SHIRT COLLARS

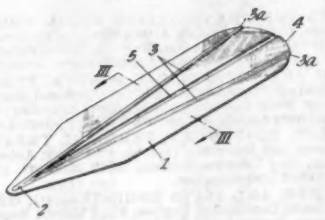
Victor Snare, and Alfred L. Clayton, both of Legard Works, Legard Road, London N. 5, England

Filed July 14, 1970, Ser. No. 54,761

Claims priority, application Great Britain, July 22, 1969, 36,727/69

Int. Cl. A41b *3/00*

U.S. Cl. 2—132 **4 Claims**

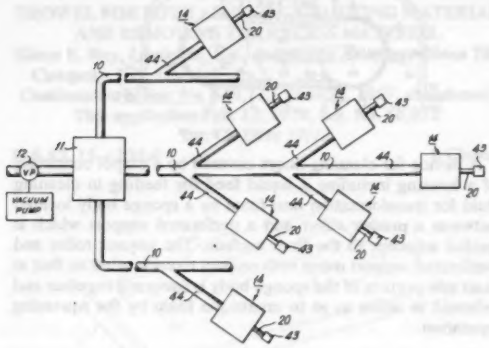


A stiffener for a front pointed edge of a soft collar made of thin flexible plastics material having a V-shape rib pressed out from one face and a single straight rib pressed out from the other face and which extends centrally of said V-shape rib and passes through the apex thereof.

3,686,693
METHOD OF CONDUCTING WASTE LIQUID BY VACUUM THROUGH LONG CONDUITS OF PNEUMATIC SEWAGE DISPOSAL SYSTEMS

Sven Algot Joel Liljendahl, Kallhall, Sweden, assignor to Aktiebolaget Electrolux, Stockholm, Sweden

Filed July 15, 1970, Ser. No. 55,090
Claims priority, application Sweden, Sept. 8, 1969, 12367/69
Int. Cl. E03d 1/00, 3/00, 5/00
U.S. Cl. 4—10 4 Claims

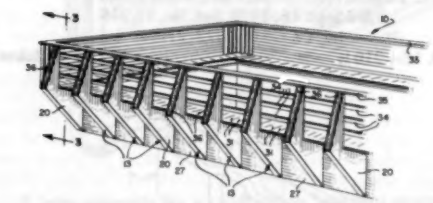


A pneumatic sewage system has a long main conduit for conducting waste liquid to a receiving tank at a partial vacuum. Waste liquid from sanitary conveniences flows through branch conduits to the main conduit, intermittently a flow control valve in each branch conduit opening when waste liquid starts to flow and closing when flow of liquid stops. When all of the valves close at the same time a long column of liquid being propelled at a high velocity in the main conduit to the receiving tank will suddenly stop. When this occurs forces are developed which adversely affect the main conduit and equipment connected thereto. In accordance with my invention ambient air is mixed with waste liquid in each branch only during the intervals of time waste liquid is flowing therethrough and while it is open. The ambient air mixed with the waste liquid functions as a resilient damper that effectively absorbs the forces developed when the long column of liquid moving through the main conduit suddenly stops.

3,686,694
SWIMMING POOL CONSTRUCTION

Paul K. Gerring, Williamsville, N.Y., assignor to Fanta Sea Swim Center, Inc., Clarence, N.Y.

Filed Aug. 25, 1970, Ser. No. 66,679
Int. Cl. E04h 3/16, 3/18
U.S. Cl. 4—172.19 3 Claims

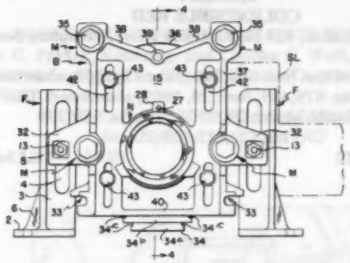


A swimming pool construction including upper and lower peripheral frameworks for supporting a plurality of spaced wall supporting ribs in spaced relationship about the rectangular periphery of a pool, with each of the ribs including a vertical wall supporting member and struts located between spaced plywood side panels including a vertical upper strut having a side for supporting a railing and an outwardly sloping strut, and a plastic cap overlying each of the outwardly sloping struts and the portions of the side panels adjacent thereto.

3,686,695
COMPACT CLOSET CARRIER

Roger L. Mielback, La Porte, and Nicholas G. Scheuer, Michigan City, both of Ind., assignors to Josam Manufacturing Co.

Filed March 26, 1971, Ser. No. 128,336
Int. Cl. E03d 11/00
U.S. Cl. 4—252 R 8 Claims

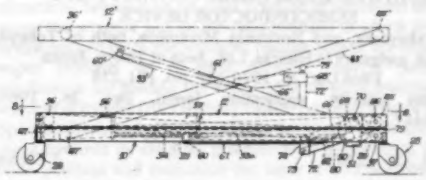


A face plate for vertically adjustably clamping to a soil line closet fitting bowl-connection branch, with a sealed axially adjustable bowl coupling connecting extension, a pair of vertically adjustable support feet and closet bowl flange clamping mounting studs, as a carrier assembly; the plate being invertible from one position for four stud mounting of a siphon jet bowl to a second position for three stud mounting of a blowout type bowl.

3,686,696
HOSPITAL BEDS

Richard W. Lanigan, Arlington Heights, Ill., assignor to American Hospital Supply Corporation, Evanston, Ill.

Filed Jan. 7, 1970, Ser. No. 1,222
Int. Cl. A61g 7/00
U.S. Cl. 5—63 10 Claims



A hospital bed has a rectangular base frame and an intermediate frame assembly mounted for vertical movement with respect to the base frame by means of side scissors linkages extending therebetween. The intermediate frame assembly includes a perimetric retract frame having telescoping portions, one being a fixed portion and the other being a movable portion. The movable portion is received by the fixed portion for extension and retraction of the foot end of the retract frame which extends beyond the foot end of the base frame in the extended position. An articulated mattress frame which includes a head panel, seat panel and upper and lower leg panels is mounted on the retract frame. Adjacent panels are pivotally interconnected for rotation about transverse axes for achieving the desired patient positions. A linkage assembly is provided for lowering and inclining the seat panel as the head panel is raised. A lift mechanism selectively tilts the retract frame about either the head end or foot end of the inter-

mediate frame to achieve the Trendelenberg and reverse Trendelenberg positions at all elevations of the intermediate frame. A selective latch mechanism is also provided for raising the lower leg panel parallel to the retract frame when the upper leg panel is raised or alternatively to permit the foot end of the lower leg panel to remain lowered while the upper leg panel is raised and thus achieve a bent knee position. The raising and lowering of the intermediate frame, the raising and lowering of the head panel while retracting the telescoping frame and tilting the seat panel, and the raising and lowering of the leg panels are all independent of each other to achieve any desired patient position.

3,686,697

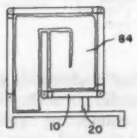
COLLAPSIBLE BED

George N. Kakalios, 429 N. Riverside Drive, Pompano Beach, Fla.

Continuation of Ser. Nos. 832,740, June 12, 1969, abandoned, and Ser. No. 878,489, Nov. 20, 1969, abandoned. This application March 29, 1971, Ser. No. 129,239

Int. Cl. A47c *19/06*

U.S. Cl. 5—152 6 Claims



This invention relates to a collapsible bed. The bed frame and legs collapse into a spiral like form for storage in a confined space. The collapsible bed provides a compact collapsed unit that may be stored in small rectangular containers such as a suit case, or various pieces of furniture. The linkage and lever arrangement provides a noncomplex mechanical linkage system that coordinates the movement of the various portions of the frame and the various legs from a open position to a collapsed position.

3,686,698

MULTIPLE ALLOY OHMIC CONTACT FOR A SEMICONDUCTOR DEVICE

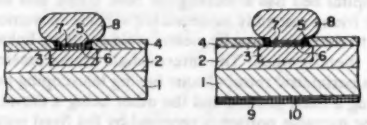
Kenji Akeyama, and Norimasa Miyamoto, both of Tokoyo, Japan, assignors to Hitachi, Ltd., both of Tokyo, Japan

Filed Dec. 24, 1970, Ser. No. 101,274

Claims priority, application Japan, Dec. 26, 1969, 44/104417

Int. Cl. H01l *3/00, 5/00*

U.S. Cl. 317—234 R 5 Claims



A protruding ohmic contact on a P type or N type semiconductor region is made by depositing an alloy of gold and a conductivity type impurity on the P type or N type region, which is heated up to a eutectic temperature of gold and the semiconductor material and thereafter depositing silver on the alloy contact; the conductivity type impurity used is such as produces the same conductivity type as that of the semiconductor region.

3,686,699

DEVICE FOR CLEANING CARPETED FLOORS

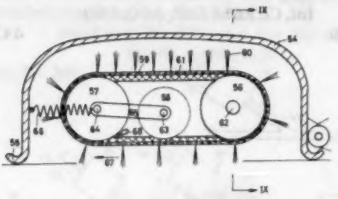
Leopold Knestele, 7971 Unterzell, Schlosshalde 71, Germany

Filed Feb. 19, 1970, Ser. No. 12,787

Claims priority, application Germany, Feb. 22, 1969, P 19 08 915.7

Int. Cl. A47l *11/03*

U.S. Cl. 15—50 R 8 Claims



A device for cleaning floors covered by a carpet consisting of a housing including a liquid feed for feeding in cleaning fluid for transformation into foam by a sponge body located between a presser roller and a perforated support which is guided adjacent to the floor surface. The presser roller and perforated support move with respect to each other so that at least one portion of the sponge body is squeezed together and released in series so as to create the foam by the squeezing operation.

3,686,700

Patent Not Issued For This Number

3,686,701

COSMETIC COMPOSITION CONTAINING MICROENCAPSULATED SOLVENTS FOR NAIL ENAMEL

Roger Charle, Soisy-sous-Montmorency; Charles Zviak, Franconville, and Gregoire Kalopissis, Paris, all of France, assignors to Societe anonyme dite: L'Oreal, Paris, France

Filed Feb. 4, 1970, Ser. No. 8,720

Claims priority, application Luxembourg, Feb. 4, 1969, 57,904

Int. Cl. A61k *7/04*

U.S. Cl. 15—104.93 2 Claims

A cosmetic composition for removing nail enamel comprises a shaped cosmetic applicator containing a multiplicity of rupturable microcapsules, a portion of which contain a first solvent for the enamel and the remainder containing a second solvent exhibiting a solvent action on the enamel greater than said first solvent and a perfume to mask the odor of said solvents.

3,686,702

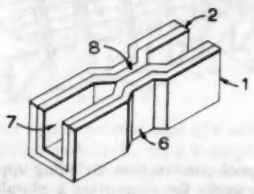
OIL STICK WIPERS

Robert L. Jordan, 1005 Sunset Lane, Bethlehem, Pa.

Filed Sept. 16, 1970, Ser. No. 72,748

Int. Cl. G01f *15/12, 23/04*

U.S. Cl. 15—210 B 2 Claims



A device attachable to fender of any place desirable by user under the hood of any car, truck or any type transmission or

like machinery which uses a dipstick device for the purpose of wiping the fluid off said dipstick preceding the actual reading of the fluid level. A device comprising a disposable or permanent wiper, a material of absorbent or nonabsorbent nature such as felt of glass fiber, the wipers being manually urged toward each other so to wipe said dipstick slideable there between. A well is provided on either end of wiper for the purpose of catching and absorbing fluid thus eliminating the pell mell that exist each time the fluid level must be checked.

3,686,703

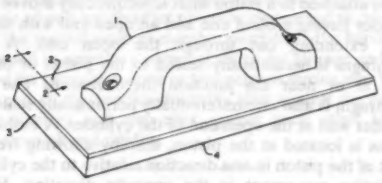
TROWEL FOR BOTH APPLYING GROUTING MATERIAL AND REMOVING THE EXCESS MATERIAL

Glenn E. Ray, Louisville, Ky., assignor to American Olean Tile Company, Inc., Lansdale, Pa.

Continuation of Ser. No. 649,713, June 28, 1967, abandoned. This application Feb. 13, 1970, Ser. No. 10,072

Int. Cl. E01c *19/12*

U.S. Cl. 15—235.4 **8 Claims**



All of the excess grouting material, remaining on a newly laid tile floor after the performance of an epoxy grouting operation, is scraped from the floor with a vulcanized natural gum rubber trowel rather than a steel trowel.

3,686,704

LAMP ASSEMBLIES FOR ROAD VEHICLES

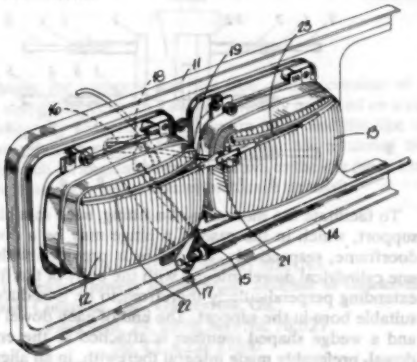
John William Sharpe, 217 Tamworth Road, Sutton Coldfield, Warwickshire, and Alfred Dickens Baker, 3 Alder Park Road, Solihull, Warwickshire, both of England

Filed March 16, 1970, Ser. No. 19,784

Claims priority, application Great Britain, March 28, 1969, 16,412/69

Int. Cl. B60s *1/06, 1/46*

U.S. Cl. 15—250.01 **6 Claims**



A lamp assembly for a road vehicle including a mounting plate which in use extends transversely of the vehicle. The mounting plate carries a pair of lamp units which are mounted adjacent one another on the mounting plate, so as to be at the left-hand side or the right-hand side of the front of the vehicle. A wiper arm is carried on a linkage arrangement supported by the mounting plate, and the wiper arm extends forwardly of the vehicle between the two lamp units. At its outer end the wiper arm is provided with a pair of wiper blades which extend in opposite directions one of the blades engaging the lens of one of the lamp units while the other blade engages the lens of the other lamp unit. A drive motor drives the linkage arrangement, and the linkage arrangement is such that the wiper arm moves in such a path that the wiper blades wipe the front surfaces of the lenses of the two lamp units. A second pair of lamp units can be mounted on the mounting plate at the opposite side of the vehicle, and the same drive mechanism can drive a second wiper arrangement associated with the other pair of lamps units. In addition, the wiping systems can incorporate means for supplying washing fluid to the lenses of the lamps during wiping.

3,686,705

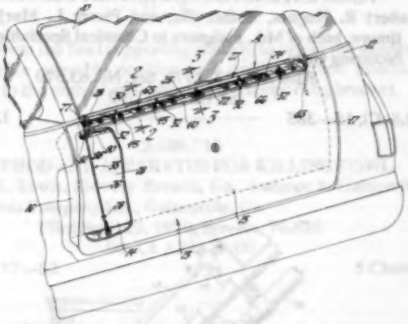
SQUEEGEE WIPER FOR TAILGATE WINDOWS

Eric G. Parker, Kettering, and Charles C. Wolf, Dayton, both of Ohio, assignors to General Motors Corporation, Detroit, Mich.

Filed April 19, 1971, Ser. No. 135,250

Int. Cl. B60s *1/46;* **A47l** *1/02*

U.S. Cl. 15—250.01 **3 Claims**



In a preferred form, this disclosure relates to a tailgate window cleaning system for cleaning a tailgate window of a station wagon vehicle. The tailgate window cleaning system comprises an elongated stationary support means which is adapted to be secured to the tailgate adjacent its upper end, an elongated window wiper for wiping the window and which is supported by the support means for movement in opposite directions between an on-glass position in which the blade engages the window and an off-glass position in which the blade is disengaged from the window, biasing means for biasing the wiper towards its on-glass position, and a positioning mechanism for holding the wiper in its off-glass position as the window is moved from its fully closed position toward its fully open position and which releases the wiper blade for movement towards its on-glass position as it approaches its fully open position and maintains the same in this position as the window is moved from its fully open position toward its fully closed position. The window cleaner system also includes a washer means which comprises a plurality of spray openings in the wiper for emitting washer fluid against the window when the window is moved from its fully open position toward its fully closed position.

3,686,706

VEHICLE WINDSCREEN WIPING MECHANISMS

Gilbert Ralph Finley, Solihull, England, assignor to Joseph Lucas (Industries) Limited, Birmingham, England

Filed Dec. 18, 1969, Ser. No. 886,424

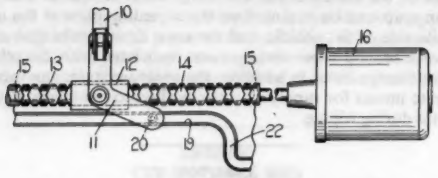
Claims priority, application Great Britain, Jan. 3, 1969, 537/69

Int. Cl. B60s *1/02*

U.S. Cl. 15—250.16 **7 Claims**

A mechanism for controlling the operating cycle of a wiper blade for cleaning a vehicle windscreen comprises a wiper arm

mounted on a carrier, which is connected to a drive rod, or belt for linear reciprocation lengthwise of an edge of the wind-



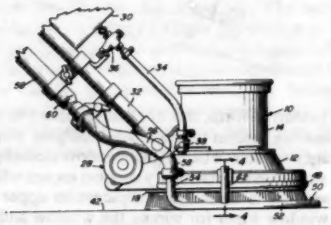
screen to be cleaned, the carrier engaging guide means whereby, at one end of the movement, the carrier and arm are caused to move angularly.

3,686,707

FOAM EXTRACTOR FOR ROTARY SCRUBBER

Robert R. Hughes, Lutherville, and Pierre L. Marjon, Baltimore, both of Md., assignors to Chemical Specialties Manufacturing Corp.

Filed Aug. 13, 1970, Ser. No. 63,579
Int. Cl. A47l *7/02*
U.S. Cl. 15—385 **13 Claims**



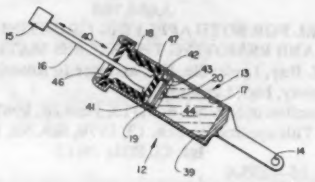
An attachment for a rotary scrubber of the type including a body from which a downwardly facing rotary scrubbing member is journalled for rotation about an upstanding axis and also including a rearwardly projecting handle for control of the scrubber by the operator thereof. The attachment includes a tubular frame member supported from the body and extending about and closely embracing a major portion of the lower periphery of the scrubbing member. The frame includes openings in its undersurface through which air and foam may be drawn and structure is provided for coupling the inlet end of a vacuum line to the frame member. Further, and probably most important, the frame member is supported from opposite sides of the scrubber body for oscillation about a horizontal transverse axis and with the structure defining the spaced portions of the axis of oscillation of the frame member at the opposite sides of the body being supported from the latter for vertical shifting between upper and lower limit positions and biased toward their lower limit positions. In this manner, the tubular air and foam induction frame member is supported from the body of the rotary scrubber in a "floating" manner specifically designed to enable the rotary scrubber to be rocked by up and down movement on the rearwardly projecting handle thereof for control of the rotary scrubber over a surface being cleaned while the tubular frame member has its lower surfaces maintained in full contact with the surface being cleaned.

3,686,708

HYDRAULIC CUSHIONING DEVICE

Emanuel J. DiNola, Briar Cliff Manor; Henry B. Klatte, Yonkers, both of N.Y., and Theodore R. Breunich, Stanford, Conn., assignors to Universal Oil Products Company, Des Plaines, Ill.

Filed Oct. 5, 1970, Ser. No. 77,999
Int. Cl. E05f *3/04*
U.S. Cl. 16—51 **3 Claims**



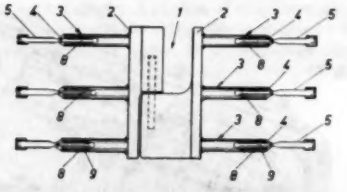
A unidirectionally operative hydraulic damping device. A piston attached to a piston shaft is reciprocally moved within a cylinder having a blind end and an open end with the piston shaft extending out through the open end. A flexible diaphragm is hermetically sealed to the piston or the piston shaft at or near the junction therebetween. The flexible diaphragm is also circumferentially hermetically sealed to the cylinder wall at the open end of the cylinder. A cushion valve means is located at the piston, thereby allowing free movement of the piston in one direction relative to the cylinder but restricting movement in the opposite direction. Hydraulic fluid is confined between the blind end of the cylinder and the flexible diaphragm is varying proportions on either side of the piston, depending upon the position of the piston in the cylinder.

3,686,709

MEANS FOR MOUNTING A FITTING AT A SUPPORT

Allan Johan Elmer Tuvert, Prastgardsgatan 12,, Goteborg, Sweden

Filed March 16, 1970, Ser. No. 19,786
Claims priority, application Sweden, March 17, 1969, 3615/69
Int. Cl. E05d *5/02*
U.S. Cl. 16—159 **1 Claim**



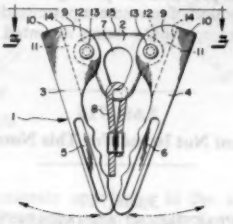
To facilitate the mounting of a fitting, such as a hinge, at a support, which in the case of a hinge may be a door and a doorframe, respectively, the fitting is provided with at least one cylindrical dowel integral with the body of the fitting and extending perpendicularly therefrom to be introduced into a suitable bore in the support. The end of each dowel is slotted and a wedge shaped member is attached to the end of the dowel, preferably made integral therewith, in an aligned position with respect to the slot. The attachment between wedge and dowel is a light bond, which will rupture when the wedge is subjected to pressure, for instance when the head of the wedge reaches the bore, into which the dowel is introduced.

The present hinge may furthermore be designed in such a manner that one U-shaped portion thereof in closed position will enclose the other portions, with both portions having interengaging members to form a snap-lock retaining the door or other element to which the hinge is fitted in closed position.

3,686,710
COLLAPSIBLE DEER DRAG

James F. Shankland, R.D. #1, Box 535, Doylestown, Ohio

Filed Dec. 8, 1970, Ser. No. 96,011
Int. Cl. A47b 95/02
U.S. Cl. 16—112 5 Claims

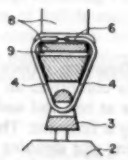


A collapsible deer drag including a center support member having an aperture therein for attachment of a rope thereto and a pair of pull bar handles pivotally connected to opposite sides of the central support member permitting the handles to be collapsed to provide a compact shape for storage and fully extended for grasping by one or two persons during use. When fully extended, the handles desirably abut against the central support member and also abut against each other for increased strength and rigidity.

3,686,711
HANGER FOR CAMERAS AND THE LIKE

Yoshio Kuramoto, Sakai; Akio Okamoto, Osaka, and Toshio Kobori, Izumiohtsu, all of Japan, assignors to Minolta Camera Kabushiki Kaisha, Osaka, Japan

Filed June 26, 1970, Ser. No. 50,272
Claims priority, application Japan, July 4, 1969, 44/63936
Int. Cl. A47b 95/02
U.S. Cl. 16—125 9 Claims



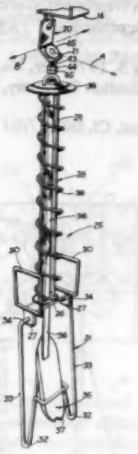
A hanger for cameras and the like, which consists of a hanger string connected to a swivel pivotally mounted on a ear piece integrally secured to the camera body and the like. A guide member is mounted on the swivel for retaining the swivel in such an angular position relative to the ear piece that the swivel may provide its maximum tensile strength.

3,686,712
SHACKLE SUSPENSION MEANS

Ernest E. Lewis, Flowery Branch, Ga., assignor to Gainesville Machine Company, Inc., Gainesville, Ga.

Filed Sept. 29, 1970, Ser. No. 76,527
Int. Cl. A22c 21/00
U.S. Cl. 17—44.1 11 Claims

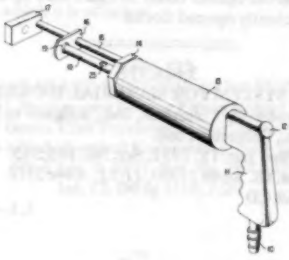
This invention relates to an improved shackle suspension means for use in orienting a support shackle relative to a predetermined direction. More particularly, this invention is directed to a supporting shackle for supporting a chicken or other fowl by its hocks from a hock-gripping member with the fowl in a head lowermost position. The suspension system includes a mounting bracket supported for movement along a predetermined path for effecting a transfer of the supporting shackle through a poultry processing operation. The suspension bracket includes an angular offset orienting surface detailed to cooperate with a suspension element extending upwardly from the fowl supporting shackle to orient the supporting shackle operable position in a predetermined direction relative to the path of movement of the supporting bracket.



3,686,713
METHOD AND APPARATUS FOR KILLING FOWL

Ernest E. Lewis, Flowery Branch, Ga., assignor to Gainesville Machine Company Inc., Gainesville, Ga.

Filed Sept. 29, 1970, Ser. No. 76,528
Int. Cl. A22c 21/00
U.S. Cl. 17—52 5 Claims

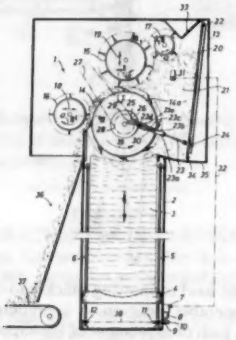


A method and apparatus for killing fowl by passing a cutting member through the head of the fowl from ear to ear, whereby both the internal and external jugular veins are severed on each side. A suitable fowl slaughtering device comprises an air powered piston in a cylinder having a lateral externally mounted rigid connecting member attached to a stripper plate and an anvil member. A rigid piston rod slidably extends through a hole in the cylinder head, and a cutting member is detachedly secured to the end of the piston rod. The cutting member includes a hole proximately located in the side thereof and has a sharpened distal end which is slidably mounted in the stripper plate. In operation, the head of the fowl to be slaughtered is held between the stripper plate and anvil, and the ears lined up with the cutting member. Actuating the piston forces the cutting member through the head from ear to ear, severing both jugular veins at each side, thereby causing profuse bleeding and rapid death. Tissue which is lodged in the cutting member from the prior slaughter is forced out through a hole on the side thereof as the cutting member strikes the anvil, thereby avoiding the need for cleaning after each use.

3,686,714
DEVICE FOR OPENING BALES OF TEXTILE FIBERS AND THE LIKE

Walter Wirth, Dulmen (Westfalen), Germany, assignor to Hergeth KG Maschinenfabrikund Apparatebau, Dulmen (Westf.), Germany

Filed May 5, 1970, Ser. No. 34,765
Claims priority, application Germany, May 7, 1969, P 19 23 326.2
Int. Cl. D01g 7/04
U.S. Cl. 19—80 R 9 Claims

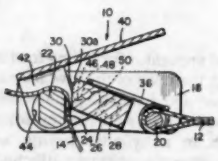


A device for removing tufts of fibers from a compressed bale of textile fibers comprises an opener roller with teeth on its periphery to remove the fiber flocks and convert them to the desired flocculent form. A back-stripper roller then removes the insufficiently opened flocks from the opener roller after which the opened flocks are removed from the opener roller by a stripper roller. The insufficiently opened flocks are returned to the opener roller where they are compressed by an oscillating panel against the opener roller causing the teeth on the opener roller to again take up and flocculate the insufficiently opened flocks.

3,686,715
STRAP SYSTEM FOR MATERIAL HANDLING

Anthony F. Brodnicki, Columbus, Ind., assignor to Ny Met Industries, Inc., Columbus, Ind.

Filed Jan. 11, 1971, Ser. No. 105,313
Int. Cl. A44b 21/00, 11/12; A44c 5/18
U.S. Cl. 24—68 CD 16 Claims



For use in a cargo hauling system including at least one structural member having a predetermined thickness and providing at least one elongated slot therein having a standard length and width, a plurality of straps, at least one connector for connecting an end of one of the straps to one of the said structural members, and at least one buckle for connecting together two of the straps. Each of the connectors comprises an elongated connector member, a portion of which moves longitudinally in such a slot, and a locking member yieldably urged to a locking position effective to prevent such movement, thereby to hold the connector member in the slot. The length of the main body portion or front side portion of the connector member is greater than the length of the slot such that it must move longitudinally within the slot to be removed therefrom. Each buckle comprises a frame including laterally spaced apart frame members receiving therebetween a portion of such a strap and a rigid member providing a gripping surface extending between the frame members and against which such a strap portion rests. A unidirectional gripping member is provided and spring urged against the strap tightly to secure it against movement relative to the gripping surface. Take-up means is provided for pulling the strap through the buckle in the direction of movement permitted by the gripping member, the take-up means being mounted on the buckle frame.

3,686,716
Patent Not Issued For This Number

3,686,717
ARTICLE ATTACHMENT AND MOUNTING DEVICE

Francis G. Merser, Framingham Center, Mass., assignor to Dennison Manufacturing Company, Framingham, Mass.

Filed March 5, 1971, Ser. No. 121,298
Int. Cl. A44b 21/00
U.S. Cl. 24—73 PF 15 Claims

An attachment or fastening device of the type used to secure tags to garments comprises an integral thermoplastic body having a cross bar at one end and a flat head portion at the other connected by a filament. The filament is provided with an axially extending slot defining a channel or loop extending transversely therethrough and adapted to receive a hook or the like. The slot is substantially spaced from the cross bar and the filament is provided with a reduced cross section along the portion extending from the cross bar. The cross bar may be bent over onto the reduced cross-sectional portion of the filament for insertion through the garment. The device serves the dual purposes of fastening the tag to the garment and providing a loop by which the garment and tag may be hung on a hook or the like for display.

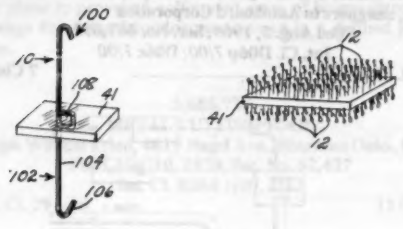
3,686,718
SELF-GRIPPING FASTENING DEVICE

George C. Brumlik, 154 Upper Mountain Ave., Montclair, N.J.

Filed Dec. 8, 1969, Ser. No. 883,141
Int. Cl. A44b 17/00
U.S. Cl. 24—204 13 Claims

A self-gripping fastening device for connecting together a pair of articles, only one of which is required to be provided with the device, comprises a plurality of hooked fastening elements made of metal wire or coated metal wire, each being secured to one of the articles. Each of the elements has at least one elongated shank terminating at its free end in a hook, and bent at its other end to provide an enlarged portion which anchors the element in the article to which it is secured by penetration of the shank through the surface. When the

fastening device on the one article is pressed against the opposing surface of the other article, the free ends of the fastening elements penetrate and lodge in the other article to thereby effect adhesion between the pair of articles.

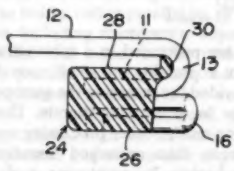


3,686,719

SLIDE FASTENER STOP

James R. Johnston, Meadville, and George B. Moertel, Conneautville, both of Pa., assignors to Textron Inc.

Filed April 15, 1970, Ser. No. 28,793
Int. Cl. A44f *19/36*
U.S. Cl. 24—205.11 F 5 Claims



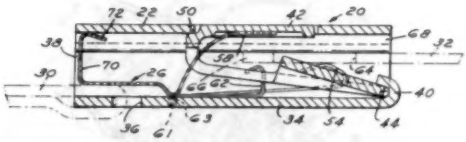
A top stop for a slide fastener of the type providing a seam-like closure, the top stop including two stop members, each being formed by a mass of fusible material disposed adjacent the end interlocking elements on either side of the slide fastener and each stop member having a curved lip disposed on the inner fold surface of folded portions of a slide fastener tape.

3,686,720

SAFETY BELT BUCKLE

William C. Wehner, 14891 Grandville, Detroit, Mich.

Filed Feb. 9, 1970, Ser. No. 9,672
Int. Cl. A44b *1/18*
U.S. Cl. 24—230 10 Claims



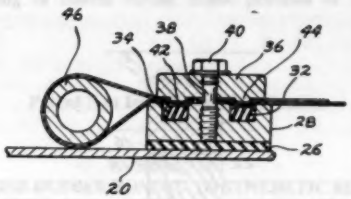
A safety belt buckle of the push button type, in which only three components are required, and which may be assembled without special tools, pins, bolts or the like. The assembly includes a single piece housing, a pivotally supported latch lever or plate, wherein the pivot axis is located at one end of the plate and the push button is at the other end, and a multipurpose spring member which secures the latch plate in the housing, spring biases the push button and guides the belt connector into coupling position.

3,686,721

CIRCULAR CLAMP FOR BALLOONS OR THE LIKE

Leroy E. Nelson, Minneapolis, Minn., assignor to Winzen Research, Inc., Minneapolis, Minn.

Filed Oct. 29, 1970, Ser. No. 85,208
Int. Cl. A44b *21/00*; B64b *1/40*
U.S. Cl. 24—243 K 14 Claims



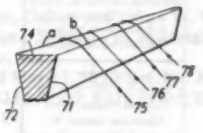
The apex end of a tape-reinforced balloon envelope is clamped between two segmented clamping rings which are mounted on a disc-shaped base member. The joint between the two segmented clamping rings is sealed by means of two resilient O-rings which function both as a gas seal and as a mechanical clamp for the reinforcing tapes and the balloon envelope. The O-rings rest in parallel grooves cut in the lower segmented ring and are compressed by matching tangs that project from the upper segmented ring. The grooves, tangs, and O-rings are dimensioned to provide the same O-ring compression factor for different thicknesses of material between the two segmented rings. The joints between the ends of the individual segments of the two clamping rings are staggered with respect to each other and each joint is sealed with a sealant or gasket material to block the escape of gas therethrough. A resilient gasket is interposed between the lower segmented clamping ring and the disc-shaped base member to which it is attached.

3,686,722

TRIPLANAR BLADE EDGE FOR YARN TEXTURIZING

Hsin Lang Li, Parsippany; George Edwin Robert Lamb, Mendham, and Dusan Ciril Prevorsek, Morristown, all of N.J., assignors to Allied Chemical Corporation, New York, N.Y.

Filed Jan. 7, 1971, Ser. No. 104,641
Int. Cl. D02g *1/10*, *1/20*
U.S. Cl. 28—1.3 4 Claims



The invention is directed to a yarn-texturizing blade having an edge consisting of three intersecting planes. The three intersecting plane edge facilitates fabrication of the blade from very hard materials because of the ease in grinding the planar surfaces and permits ready evaluation of the performance of the blade on the yarn. The blade has the further advantage in that, because of its configuration, it is resistant to chipping and offers processing advantage to the fiber which is passed over the two consecutive edges formed by the three intersecting planes resulting in a better product and allowing a much higher speed for the passage of the yarn over the blade. This triplanar edge also allows use of edges with much smaller radius of curvature without cutting the fiber.

3,686,723

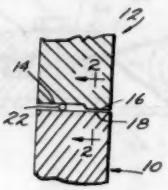
GEARS FOR CRIMPING YARN

Alan Keith Dunnell; David Greenwood, and Thomas C. J. Wade, all of Pontypool, England, assignors to Imperial Chemical Industries Limited, London, England

Continuation of Ser. No. 794,929, Jan. 29, 1969, abandoned. This application Nov. 13, 1970, Ser. No. 89,511

Int. Cl. D02g 1/14

U.S. Cl. 28—1.8 **2 Claims**



Gears for crimping and in particular for crimping yarn in which at least one of the gears is an integral stepped structure having gear teeth on a portion of greater diameter and gear teeth on a portion of lesser diameter both sets of which teeth intermesh with teeth on another gear.

3,686,724

Patent Not Issued For This Number

3,686,725

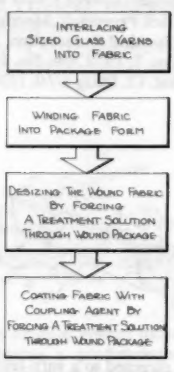
METHOD OF FORMING GLASS FABRIC SUITABLE FOR CASTS, BANDAGES, AND THE LIKE

John L. Nisbet, and Hubert C. Woodall, Jr., both of Winston-Salem, N.C., assignors to Carolina Narrow Fabric Company, Winston-Salem, N.C.

Filed Dec. 29, 1969, Ser. No. 888,447

Int. Cl. D06c 27/00, 29/00; A61l 15/00

U.S. Cl. 28—74 R **4 Claims**


INTERLACING SIZED GLASS YARNS INTO FABRIC
WINDING FABRIC INTO PACKAGE FORM
DESIZING THE WOUND FABRIC BY FORCING A TREATMENT SOLUTION THROUGH WOUND PACKAGE
COATING FABRIC WITH COUPLING AGENT BY FORCING A TREATMENT SOLUTION THROUGH WOUND PACKAGE

A relatively open air permeable glass fiber fabric for use in orthopedic casts, bandages and the like and comprising interlaced chemically desized glass yarns consisting essentially of filaments having an average diameter not greater than about 0.00021 inch. A method of forming such a fabric wherein glass yarns are formed which consist essentially of filaments of the above diameter, the glass yarns are formed into a relatively open air, permeable, flexible fabric, and the glass yarns are chemically desized either before or after formation into the fabric. A coupling agent may also be applied to the glass yarns or fabric.

3,686,726

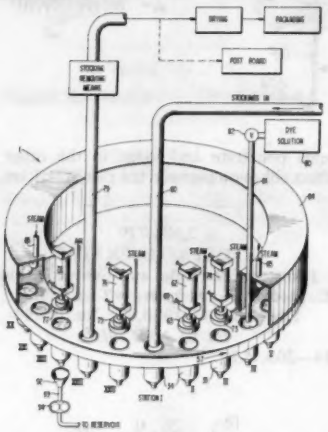
METHOD OF SHRINKING AND/OR DYEING KNIT GARMENTS

John W. Glaze, Jr., and James P. Propst, both of Charlotte, N.C., assignors to Autoboard Corporation

Filed Aug. 5, 1969, Ser. No. 847,692

Int. Cl. D06p 7/00; D06c 1/00

U.S. Cl. 28—74 H **7 Claims**



Knit garments are processed in a substantially continuous process in which a plurality of small movable processing chambers are provided for receiving the garments individually or in small groups for processing therein. The garments are subjected to dyeing and/or other processing operations in the individual chambers, then conveyed therefrom for further processing or packaging. By employing a plurality of small processing chambers, garments may be delivered individually as from a knitting or sewing operation and processed individually or in small groups with the garments processed in the individual chambers remaining separated for further automatic operations such as packaging.

3,686,727

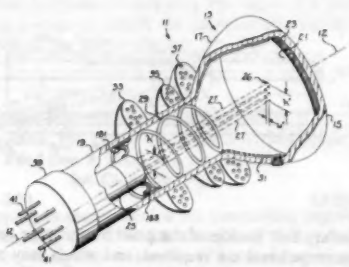
METHOD OF FABRICATING A MULTIBEAM ELECTRON GUN STRUCTURE

Donald L. Say, and Harry E. Smithgall, both of Seneca Falls, N.Y., assignors to Sylvania Electric Products, Inc.

Continuation-in-part of Ser. No. 860,626, Sept. 24, 1969. This application March 22, 1971, Ser. No. 126,610

Int. Cl. H01j 9/18, 9/36

U.S. Cl. 29—25.16 **9 Claims**



A method of fabricating a multibeam single electron gun structure for an electron discharge device, such as a high resolution cathode ray tube, wherein a plurality of beams emanating from a common emission plane are separately modulated by a planar arrangement of separate control elec-

trode members each having a beam aperture therein forming an aperture array. At least one accelerating-collimating electrode plane having a similar array of apertures is oriented in spaced and substantially parallel relationship with the control grid plane to provide a collimated array of beams directed to impinge the cathodoluminescent screen in a defined pattern array.

3,686,728

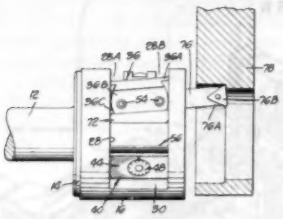
METAL CUTTING TOOL

Joseph William Fried, 4619 Nagel Ave., Sherman Oaks, Calif.

Filed Aug. 10, 1970, Ser. No. 62,427

Int. Cl. B26d *1/00, 1/12*

U.S. Cl. 29—96 **11 Claims**



A rotary cutting tool comprising a cutter holder movable on a rotary body to hold a cutter parallel to, or at an angle to the axis of rotation including micrometer adjustment means for moving the cutter and cutter holder within precise limits, spacer blocks, parallel faced or tapered for interposition between the adjustment means and the cutter holder to increase the limit of cutter adjustment, the blocks being calibrated in correlation with the micrometer adjustment, the cutter being adjustable and secure-able to positions parallel to or at an angle to the axis of rotation independently of the adjustment means.

3,686,729

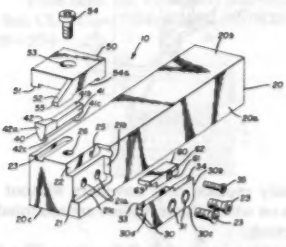
CUTOFF OR GROOVING TOOL AND HOLDER THEREFOR

Burton L. Cochran, North Canton, Ohio, assignor to The Warner & Swasey Company, Cleveland, Ohio

Division of Ser. No. 24,808, April 1, 1970, which is a continuation of Ser. No. 716,843, March 28, 1968. This application May 5, 1971, Ser. No. 140,455

Int. Cl. B26d *1/00*

U.S. Cl. 29—96 **2 Claims**



A cut-off or grooving tool that includes a holder and a replaceable cutting insert with the holder including a main body portion, a support blade, and a clamping arm and with the insert being an elongate, relatively pencil-like component adapted to be seated on the blade of the holder and clamped in place thereon by the clamping arm with a backup element serving to determine the extent of longitudinal projection of the cutting insert on the support blade. The insert and holder are characterized by complementarily engaged V-shaped surfaces of the type set forth in Novkov U.S. Pat. No. 2,964,833.

The shank portion of the insert generally has a lesser height than the shank portion of the insert shown in Novkov U.S. Pat. No. 2,964,833 while the cutting tip portion thereof has a proportionately greater heighth than that of the insert shown in Novkov U.S. Pat. No. 2,964,833.

Use of the backup component rearwardly of the insert permits use of a series of such members so as to insure correct positioning of inserts having shank portions of different length.

3,686,730

Patent Not Issued For This Number

3,686,731

SILICONE RUBBER BONDED TO SYNTHETIC RUBBER UTILIZING ORGANOTRIHALOGENOSILANE AS A PRIMER

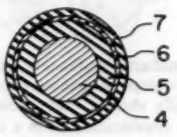
Shigeyoshi Koori, 359, Kami, Ageo-shi, Saitama-ken; Hiroshi Inomata, 12-37, Isobe 3-chome, and Kiyoshi Imai, 6-10, Isobe 3-chome, both of Annaka-shi, Gunma-ken, all of Japan

Filed Oct. 6, 1970, Ser. No. 78,416

Claims priority, application Japan, Oct. 7, 1969, 44/80047

Int. Cl. B32b *25/08, 25/20*

U.S. Cl. 29—132 **7 Claims**



A layer composition which is prepared by bonding room temperature-curing type silicone rubber and a synthetic rubber layer with a primer consisting essentially of organotrihalogenosilane represented by the general formula:

$$RSiX_3$$

(where R is selected from the group consisting of a vinyl radical and an allyl radical, and X is a halogen atom).

The layer composition is useful as a material for preparing various industrial instruments, which has excellent bonding strength and durability, particularly, as a silicone rubber coated roll, which would stand a long operation at high temperatures and under strong nip pressure.

3,686,732

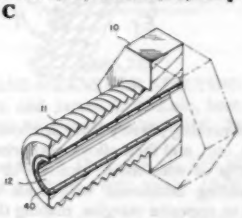
THE METHOD OF MAKING A POSITIVE CHOKE DEVICE

James H. McClure, Dallas, and James W. McCrary, Richardson, both of Tex., assignors to Materials Technology Corporation, Dallas, Tex.

Filed May 11, 1970, Ser. No. 35,976

Int. Cl. B21d *53/00;* **B21k** *29/00;* **B23p** *15/26*

U.S. Cl. 29—157 C **5 Claims**



Disclosed is a positive choke device having bore liner of silicon carbide. Also disclosed is a method of fabricating flow

beans and the like having bore coatings of corrosion resistant materials having a hardness of at least 2,700 on the Knoop scale without machining of hard materials.

3,686,733

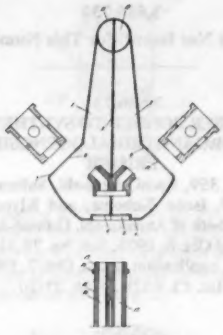
PROCESS TO MAKE COCKS AND SPECIFICALLY WATER FAUCETS

Carlos Sauret Ponsa, 7 & 9, Calle Pelayo, Barcelona, Spain

Filed Jan. 5, 1970, Ser. No. 524

Int. Cl. B21d *53/00;* **B21k** *29/00;* **B23p** *15/26*

U.S. Cl. 29—157.1 R **8 Claims**



A method of manufacturing faucets, particularly washbasins and baths, includes steps of making two stainless steel plate, mirror-symmetrically shaped shell sections having abutting surfaces, which in combination form a cavity having a spout opening, an inlet opening, and lateral openings. The abutting surfaces are brought together and permanently connected by welding. A fluid supply member is soldered to the shell sections in the region of the inlet opening so that an inner portion of the supply member is located within the cavity. Hollow cylindrical valve assemblies are then inserted through the lateral openings and meshed with the end portions to fully seal the lateral opening.

3,686,734

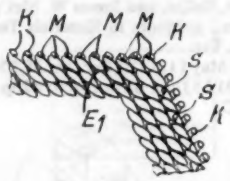
METHOD OF MANUFACTURING JEWELS OF GOLD OR PLATINUM OR THEIR ALLOYS

Maurice Labarte, 31 rue Paul Cezanne, La Rochette near Melun (Seine et Marne), and Jacques Lenfant, 47 rue des Petits Champs, Paris 1er, both of France

Filed June 29, 1970, Ser. No. 50,811

Int. Cl. B21f *43/00;* **B23p** *13/00*

U.S. Cl. 29—160.6 **5 Claims**



A method of making jewelry from precious metals, such as gold, platinum, etc., and their alloys, comprises starting with a rectangular strip of wire mesh, (known in the trade as "milanese"), adding additional wire coils of progressively shorter length to opposite margins, placing the loosely woven mesh into a shaping press to progressively compress the mesh into a circular or oval shape, coating one face with molding wax, electroplating the other side with copper, annealing and scouring the first surface, hammering the surface to crush the wires into a denser mass while retaining its circular, or oval, shape, re-annealing and re-scouring the mesh, coating the hammered surface with wax, repeating the copper electroplating step on the back, placing the plated surface in contact with a die having the desired design, hammering the first face again while the coppered surface contacts the die and removing the copper by acid etching.

3,686,735

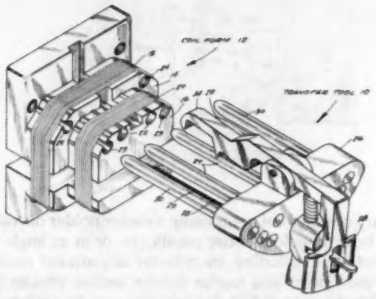
COIL TRANSFER TOOL

Donald Everett Hill, and Robert G. Walker, both of Fort Wayne, Ind., assignors to Industra Products, Inc., Fort Wayne, Ind.

Continuation-in-part of Ser. No. 536,118, March 21, 1966, abandoned. This application Dec. 13, 1966, Ser. No. 609,976

Int. Cl. H02k *15/06*

U.S. Cl. 29—205 R **9 Claims**



Armature coils are picked up, moved, and put on a placing machine by a transfer tool having spacer pins for separately carrying the coils. The tool has alignment pins that insure proper position of the tool when the coils are picked up or put on the placing machine. The tool may have a clamp to hold the coils on the tool during the time the coils are moved.

3,686,736

TOOL FOR REMOVING RING TRAVELLERS

Francois Sanchez, 1390 Mayrand St., and Martial Jutras, 33 St. Marcel, both of Drummondville, Quebec, Canada

Filed Oct. 29, 1970, Ser. No. 85,051

Int. Cl. B23p *19/04*

U.S. Cl. 29—207 **9 Claims**

A tool to easily replace ring travellers without damaging flange members on which the travellers are mounted. The tool has a holding action.

One tool comprises a pair of shaft members. The shaft members are pivotably connected. The portions of the shaft members at one side of the pivot form a pair of operating handles, and at the other side a pair of aligned projecting elements adapted to engage a ring traveller on its inner opposed sides whereby on closure of said handles, the said projecting elements open and thereby open the said inner opposed sides. The handles are preferably bent with respect the to the projecting elements for ease of manipulation. The projecting elements are preferably provided with guard members.

3,686,737

Patent Not Issued For This Number

3,686,738

BELT LACING MACHINE

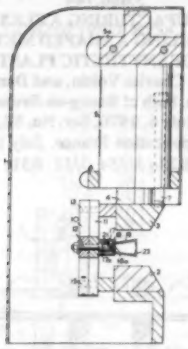
George A. Thomson, Burlington, Ontario, Canada, assignor to Bulldog Lacing Limited, Hamilton, Ontario, Canada

Filed March 17, 1970, Ser. No. 20,247

Claims priority, application Canada, March 20, 1969, 046283

Int. Cl. B23p *11/00*

U.S. Cl. 29—243.51 **6 Claims**



A belt lacing machine for inserting a series of generally U-shaped hooks having inwardly bent tips into an end portion of the belt includes a fixed jaw, a movable jaw, and a pair of crossed links of equal length pivotally connected together at a position midway along their lengths. One end of each link is pivotally connected by a lost motion connection to the fixed jaw, and the other end of each link is pivotally connected by a lost motion connection to the movable jaw. A magazine for a series of hooks is connected to the links at the midlength position to position the hooks midway between the jaws. The movable jaw is moved towards the fixed jaw to force the hooks into a belt end portion inserted between the tips of the hooks and to pivot the links relatively to one another so that the hooks are maintained midway between the jaws.

3,686,739

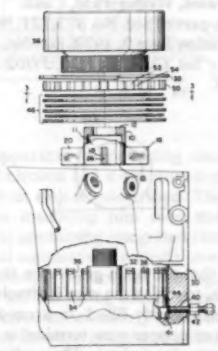
INTERMEDIATE CLUTCH ALIGNMENT TOOL

Anthony Frank Manero, 10918 Modena Place, Philadelphia, Pa.

Filed Sept. 28, 1970, Ser. No. 76,104

Int. Cl. B23p *19/04*; B25b *1/20*; B25j *1/00*

U.S. Cl. 29—274 **3 Claims**



An intermediate clutch alignment tool for use in assembling automatic transmissions including a hollow, cylindrical body overfitting the center support and a plurality of alignment arms radially extending from the periphery of the body, each said arm terminating outwardly in a longitudinally aligned groove for receiving and aligning a plurality of individual clutch plates.

3,686,740

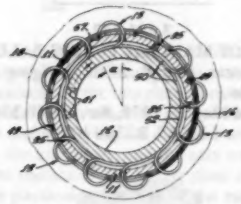
METHOD OF ASSEMBLYING A SUTURELESS HEART VALVE

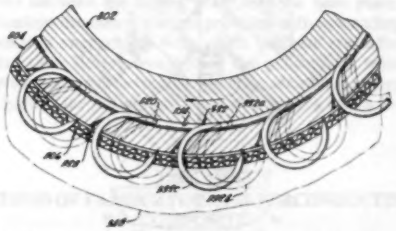
Donald P. Shiley, 11022 Huntinghorn, Santa Ana, Calif.

Continuation-in-part of Ser. No. 547,580, April 4, 1966, abandoned, Division of Ser. No. 687,249, Dec. 1, 1967, Pat. No. 3,587,115. This application June 19, 1970, Ser. No. 59,800

Int. Cl. B23p *19/00*, *11/00*

U.S. Cl. 29—439 **6 Claims**





An inner ring carrying a check valve is rotatably mounted within an outer ring, and a series of spaced wires are confined between the rings with their free ends positioned in openings in the outer ring. Rotating the inner ring with respect to the outer ring forces the wire ends outwardly to pierce a fabric ring and the surrounding heart tissue and then curl back towards the valve.

3,686,741

METHOD AND MEANS FOR APPLYING O-RINGS

Earl J. Williams, and James E. McLain, both of Cincinnati, Ohio, assignors to Precision-Cincinnati, Inc., Cincinnati, Ohio

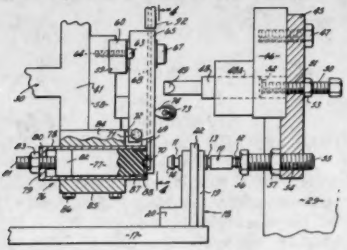
Filed Feb. 8, 1971, Ser. No. 113,162

Int. Cl. B23p *11/02*, *19/04*, *19/02*

U.S. Cl. 29—450 **14 Claims**

Method and means for seating a resilient O-ring in an annular groove in a cylindrical part, said part having a tapered end adjacent said groove, in which the O-ring is interposed between the tapered end of the part and a deformable, resilient body, and the part and body then moved relatively toward one another such that the tapered end of the part

passes through the O-ring and deforms the body by indenting it to the extent that surfaces of the body are presented to the



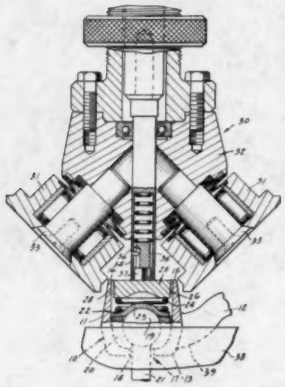
O-ring to press the O-ring relatively over the tapered end of the part to the groove to seat therein.

3,686,742

METHOD OF MANUFACTURING BALL JOINT

Edward J. Herbenar, Detroit, Mich., assignor to TRW Inc., Cleveland, Ohio

Filed May 25, 1970, Ser. No. 40,316
Int. Cl. B23p *11/00*
U.S. Cl. 29—441 3 Claims



A method of manufacturing an internally-threaded plug-closed ball joint which comprises the steps of forming a ball joint housing having an opening in one end through which the shank of a ball-ended stud may project and an opening in the other end for inserting the stud and other internal components, placing a male threaded plug in the other opening to a desired height, the threads of the male threaded plug having a major diameter equal to or less than the diameter of the opening, and spin-swedging the housing from the exterior thereof to flow housing metal into the grooves of the plug whereby internal threads are formed in the housing.

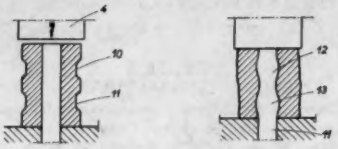
3,686,743

METHOD OF FASHIONING ANCHORAGE HEADS ON METAL RODS

Georges Thillet, Grenoble, France, assignor to B.V.S., Grenoble, France

Filed June 9, 1969, Ser. No. 831,390
Claims priority, application France, June 18, 1968, 155434
Int. Cl. B21d *39/00*
U.S. Cl. 29—452 2 Claims

A method of forming an anchoring head on a metal rod which comprises holding the rod near its end in a clamp, locating a ring round the projecting free end, and simultaneously



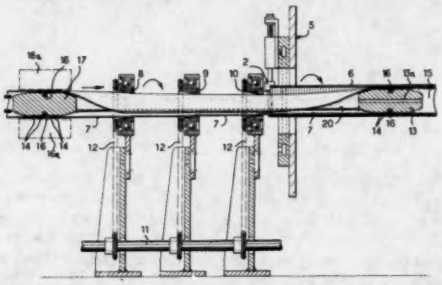
compressing the free end and ring.

3,686,744

METHOD OF MANUFACTURING A FLEXIBLE TUBULAR MEMBER BY COILING A SHAPED METALLIC STRIP ABOUT A TUBE OF SNYTHETIC PLASTIC MATERIAL

Rene A. Mazuir, rue Charles Voisin, and Daniel Hoffmann, 34, boulevard de Brou, both of Bourg-en-Bresse, France

Filed July 6, 1970, Ser. No. 52,296
Claims priority, application France, July 10, 1969, 6923533
Int. Cl. B23q *3/154, 3/18;* B31c *13/00*
U.S. Cl. 29—456 9 Claims



Method of manufacturing a flexible tubular member by coiling a shaped metallic strip about a tube of synthetic plastic material in which the tube of synthetic material is flattened and curved into an arcuate cross-section before entering the forming head which forms the metallic strip into a tube. The invention includes apparatus for carrying out this process.

3,686,745

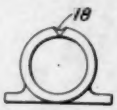
Patent Not Issued For This Number

3,686,746

CLOSING WIRE TERMINALS

Childress B. Gwyn, Jr., Wethersfield, Conn., assignor to Contacts, Incorporated, Wethersfield, Conn.

Continuation-in-part of Ser. No. 873,721, Nov. 3, 1969. This application June 9, 1970, Ser. No. 44,777
Int. Cl. B23k *1/20, 31/02*
U.S. Cl. 29—488 8 Claims



It is required that the open groove on the rounded portion of wire terminals, to which the wire is attached, be brazed shut or otherwise permanently filled. In accordance with this invention, a brass or copper wire terminal is plated with a very thin layer of silver, tin, or both. The surface is thereafter oxidized by heating in air. The assembly is then heated in a

reducing atmosphere and, by virtue of eutectic brazing, an excellent metallurgical bond fills the groove. No solder or brazing alloys are used. This invention is a refinement of the bonding process disclosed in U.S. Pat. application Ser. No. 873,721 filed Nov. 3, 1969.

3,686,747

ELECTRICALLY INSULATING PIPE UNION

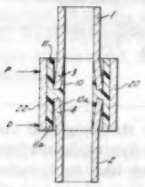
Luigi Bagnulo, Via A. Volta, 18, Milan, Italy

Filed Dec. 18, 1969, Ser. No. 886,104

Claims priority, application Italy, Dec. 21, 1968, 849618 A/68.

Int. Cl. B21d *39/00*; B23p *11/02*

U.S. Cl. 29—508 3 Claims



A pair of tubular metallic pipes having adjacent axially aligned outwardly flared end portions accommodated in axially spaced annular portions of a first deformable shape-retaining sleeve with a second deformable shape-retaining outer sleeve tightly surround the inner sleeve to thereby form a hermetically sealed interconnecting assembly for the respective pipes.

3,686,748

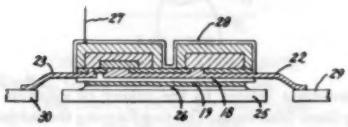
METHOD AND APPARATUS FOR PROVIDNG THERMAL CONTACT AND ELECTRICAL ISOLATION OF INTEGRATED CIRCUITS

William E. Engeler, Scotia, and Dale M. Brown, Schenectady, both of N.Y.

Filed April 13, 1970, Ser. No. 27,650

Int. Cl. B01j *17/00*; H01l *1/10*

U.S. Cl. 29—577 7 Claims



A method and apparatus for providing electrical isolation between integrated circuits and a common high thermal conduction path to a heat sink are described. The method comprises providing an insulating film over the surface of a semiconductor wafer containing integrated circuits, forming a layer of high thermal conductivity material over the insulating film, selectively removing portions of the high thermal conductivity layer and the insulating film in regions between individual integrated circuits, selectively removing the semiconductor material from between integrated circuit elements and providing a low thermal resistance path between the high thermal conductivity layer and a suitable heat sink.

3,686,749

IGNITION DISTRIBUTORS

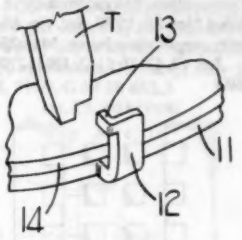
William Harold Cooksey, Walsall, Staffordshire, England, assignor to Joseph Lucas (Industries) Limited, Birmingham, England

Filed Aug. 12, 1970, Ser. No. 63,245

Claims priority, application Great Britain, Oct. 13, 1969, 50,182/69

Int. Cl. H02k *15/02*

U.S. Cl. 29—598 4 Claims



A method of assembling an ignition distributor includes the steps of engaging an annular timing plate with an annular base plate. Mating surfaces on the two plates locate the timing plate for angular movement on the base plate when the two plates are engaged. A deforming tool is engaged with three ears or tags formed on the base plate, and the ears are deformed into contact with the surface of the timing plate remote from the base plate. The physical properties of the ears are such that when the deforming tool is removed, the inherent resilience of the ears causes the ears to flex away from the timing plate through a predetermined distance so that a predetermined clearance exists between the timing plate and the ears. The predetermined clearance permits a predetermined axial freedom between the timing plate and the base plate. In a modification the timing plate is provided with upstanding projections into engagement with which the ears are deformed, the ears then flexing away from the projections when the deforming tool is removed, so that the clearance is equal to the heights of the projections plus the mount by which the ears flex.

3,686,750

METHOD OF FABRICATING A SUPERCONDUCTING COMPOSITE

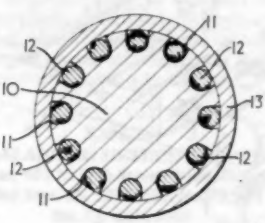
Alan Woolcock, 4 Rocklands Crescent, Lichfield, Straffordshire; Ian Leitel McDougall, Flat 8, 272 Clarence Road, Four Oaks, Sutton Coldfield, Warwickshire, and Anthony Clifford Baker, 4 Pinfold Road, Lichfield, Straffordshire, all of England

Filed Aug. 28, 1970, Ser. No. 67,740

Claims priority, application Great Britain, Sept. 2, 1969, 43,330/69

Int. Cl. H01v *11/00*

U.S. Cl. 29—599 5 Claims



A method of manufacturing a superconductor composite comprising taking a rod of a ductile normal material of which the periphery is provided with a plurality of longitudinally-ex-

tending grooves penetrating part-way towards the longitudinal axis of the rod, locating within at least one of said grooves at least one superconductor filament extending along the length of said groove, and closing the mouths of said grooves, and a composite manufactured by this method.

3,686,751

METHOD OF MANUFACTURING A MAGNETIC HEAD

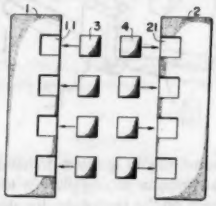
Keiji Sugiyama, Yamanashi, Japan, assignor to Pioneer Electronic Corporation, Tokyo, Japan

Filed May 25, 1970, Ser. No. 40,140

Claims priority, application Japan, May 23, 1969, 44/40469

Int. Cl. G11b 5/42; H01f 7/06

U.S. Cl. 29—603 **10 Claims**



A requisite number of bezels or recesses in a non-permeable substance holding member, for example, a ceramic glass, are filled with magnetic chips, and the non-permeable substance is crystallized or sintered. In process of crystallizing or sintering, the non-permeable substance contracts and firmly holds the magnetic chips. Preferably, some glaze is previously put in the gap between a wall of the bezel and the chip. Magneto-electric converting means, for example, a Hall element, is vapor deposited onto each chip and aligned so as to correspond with each track of a magnetic tape. And then the other non-permeable substance holding member which holds one or more magnetic substance chips with, correspondingly, the magneto-electric converting means is united with the above-mentioned non-permeable substance holding member in order that each magneto-electric converting means is positioned in a gap between the corresponding chips, and a magnetic circuit is formed.

3,686,752

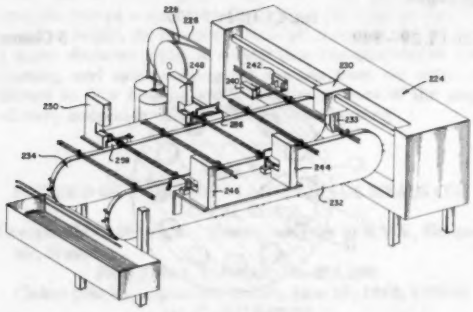
METHOD OF MAKING ELECTRICAL LEADS

James Woodrow Hammond, Camp Hill, Pa., assignor to AMP Incorporated, Harrisburg, Pa.

Division of Ser. No. 858,666, Sept. 27, 1969, Pat. No. 3,583,055. This application Feb. 26, 1971, Ser. No. 119,316

Int. Cl. H05k 43/00

U.S. Cl. 29—628 **3 Claims**



Method of producing electrical leads comprising steps of feeding a pair of wires to a conveyor type lead making machine having spaced apart wire grippers thereon. Wires are severed to provide two leads in the gripper at the loading station. As conveyor indexes, leads are carried towards a first terminal applicator. One lead is deflected when the lead gripper arrives at this first applicator and the other lead is presented to the applicator for termination. Lead gripper is moved by conveyor to second terminal applicator and the terminated lead is deflected, the other lead being presented to the second applicator for termination.

3,686,753

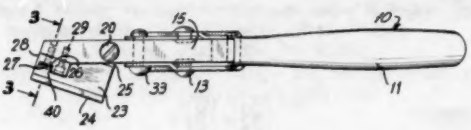
ELECTRICAL WIRE CUTTING AND STRIPPING TOOL

Gerhard Baeslack, 1850 Billingsly Terrace, Bronx, N.Y.

Filed June 29, 1970, Ser. No. 50,842

Int. Cl. H02g 1/12

U.S. Cl. 30—90.8 **2 Claims**



An electrical wire stripping and cutting tool particularly adapted for stripping the insulation from Romex wire and the like, having a scissor-like tool including a cutting blade disposed on the end thereof over an offset guideway for permitting the cable to by guided through the guideway during the stripping operation. A means is also provided for controlling the depth of the cut of the blade.

3,686,754

CALCINABLE RING IN THERMOPLASTIC MATERIAL FOR TAKING IMPRINTS WHEN MAKING PERMANENTLY FIXED FALSE TEETH

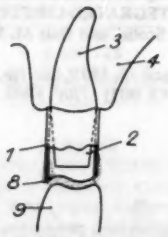
Joseph Charles Richard Kondoloff, 1 Place du March, 57 Saint Avold, France

Filed Nov. 3, 1970, Ser. No. 86,541

Claims priority, application France, Dec. 19, 1969, 6944029

Int. Cl. A61c 9/00

U.S. Cl. 32—17 **3 Claims**

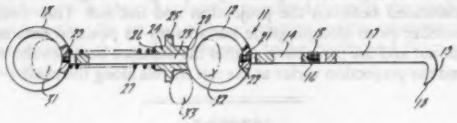


This invention relates to the taking of imprints for permanently fixed false teeth. The ring forming the subject matter of the invention is made of calcinable thermoplastic material and is of substantially cylindrical shape with a wall thickness of 0.3 – 0.4 mm and a height of 8 – 12 mm, the ring being provided to suit diameters increasing by 0.5 mm for example over the range 4 to 13 mm approximately. Its cervical edge is indented. To obtain the imprint, this ring is fitted on to the stump of the tooth to be replaced and the imprint or model is then taken directly. This ring avoids the need for preparing a ring in special metal.

3,686,755

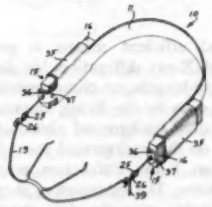
Patent Not Issued For This Number

3,686,756
DENTAL HAMMER
Harry A. Pankratz, 15494 Mark Twain, Detroit, Mich.
Filed April 7, 1971, Ser. No. 132,058
Int. Cl. A61c 3/16
U.S. Cl. 32—43 8 Claims



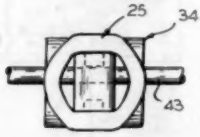
A tool for mounting or removing a crown or other dental insert using only one hand, so that the other is free to grasp the insert. The tool comprises a finger ring with a tool supporting rod extending from one end and a hammer supporting rod from the other. A second ring is mounted on the outer end of the hammer supporting rod. A spring-urged hammer on this rod has a ridge so that, when the tool is grasped between the thumb and middle finger of one hand, the index finger of that hand can operate the hammer.

3,686,757
CONSTANT TENSION ORTHODONTIC APPLIANCE
Jack C. McVickers, 8118 Halton Road, and Eugene A. Leatherman, 204 E. Joppa Road, both of Towson, Md.
Filed Dec. 9, 1970, Ser. No. 96,394
Int. Cl. A61c 7/00
U.S. Cl. 32—14 D 7 Claims



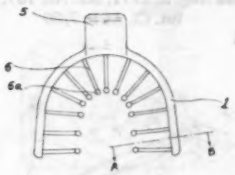
Apparatus to aid in the orthodontic or orthopedic correction of dental-facial malformations. The apparatus includes a harness connected to an orthodontic or orthopedic appliance and applies a predetermined constant force in a prescribed direction. The force applied to the appliance is substantially constant regardless of the vertical and lateral movement of the head of the wearer relative to the harness or as the desired displacement of the dental-facial structures occur.

3,686,758
ORTHODONTIC APPLIANCE
Peter C. Kesling, Green Acres, La Porte, Ind.
Filed Dec. 21, 1970, Ser. No. 99,846
Int. Cl. A61c 7/00
U.S. Cl. 32—14 A 15 Claims



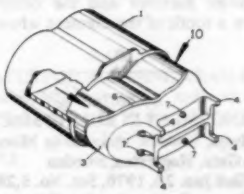
An orthodontic appliance for locking an arch wire or arch wires to an orthodontic bracket and to provide movement control, wherein the bracket includes an occlusal-gingivally extending opening or suitable sockets. The appliance, in the form of a full or half-ring shaped frame, includes an arch wire locking arm extending from the frame that will lock the arch wire or arch wires in place on a bracket and will also extend into one end of the bracket opening, and a projection on the frame opposite the arm which extends into the other end of the bracket opening.

3,686,759
FRAME FOR TAKING BITE IMPRESSIONS
Erna Morbor Pross geb. Hogreve, 2901 Sandhatten, Germany
Filed May 20, 1970, Ser. No. 39,034
Claims priority, application Germany, May 21, 1969, P 19 25 932.6; July 18, 1969, G 69 28 453.3
Int. Cl. A61c 9/00
U.S. Cl. 32—17 6 Claims



A frame for taking bite impressions for making partial teeth prosthesis, extensions of prosthesis, crowns and bridges and the like, wherein at least one frame is used which runs parallel to the row of teeth for receiving bite impressions, and includes a plurality of retaining elements coupled to the frame for retaining the material which takes the impressions.

3,686,760
MOLDING MEANS AND DISPLAY CASING FOR REPLICAS OF FRONTAL TEETH BEFORE AND AFTER ORTHODONTIC TREATMENT
Bernard Geltzer, 7400 N. Kendall Drive, Miami, Fla.
Filed Oct. 5, 1970, Ser. No. 77,899
Int. Cl. A61c 9/00
U.S. Cl. 32—17 5 Claims

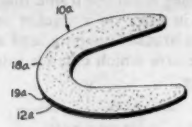


A reusable dental molding device for retaining a temporary impression of the frontal teeth of a patient for forming a separate molded plastic replica of the frontal teeth before and after a period of orthodontial treatment including a display casing for retaining normal size replicas of the teeth before and after treatment in opposite sides thereof.

3,686,761
DENTAL BALANCING METHOD AND APPARATUS
Frank G. Gravon, 951 E. 11th Street, Bend, Oreg.
Filed Sept. 25, 1970, Ser. No. 75,614
Int. Cl. A61c 9/00
U.S. Cl. 32—19 2 Claims

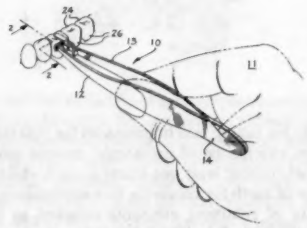
A thin, flat, deformable and flexible member having a resilient core and flat fine abrasive surfaces is inserted between the teeth of a wearer of a denture plate with the abra-

sive surfaces in contact with the occlusal surfaces of the upper and lower teeth. Then the wearer moves his jaws in a normal



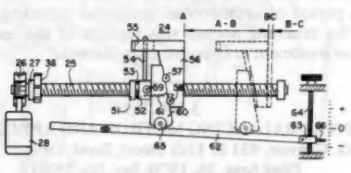
chewing or grinding motion to balance the dentures by removing high spots in the occlusal surfaces of the dentures.

3,686,762
ORTHODONTIC APPLICATOR TOOL
Robert E. Sutter, 95 Greenway Circle, Sacramento, Calif.
Filed Aug. 2, 1971, Ser. No. 167,905
Int. Cl. A61c 7/00
U.S. Cl. 32—66 **4 Claims**



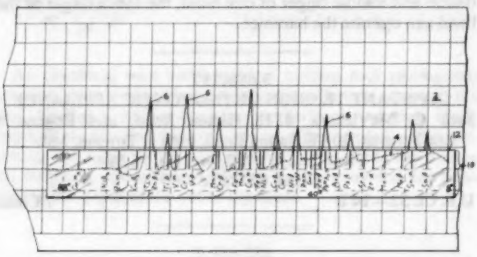
An orthodontic applicator device for disposing orthodontic elements upon teeth at a predetermined displacement from the plane of the biting surface of each tooth serves to permit the ready alignment of orthodontic brackets as they are glued directly to the teeth. The device includes a forceps having a pair of elongated leaves terminating in confronting tip ends. The tips of the leaves include confronting registration detents for engaging an opening in the orthodontic element, such as a bracket. A registration feeler member is carried by the forceps in a manner to extend above and beyond the end of the leaves for engaging the biting surface of a tooth. The spacing between the feeler member and the detents defines the disposition upon a tooth of the element when carried by the forceps.

3,686,763
ARRANGEMENT IN RULING MACHINE
Hartvig Soe, Alvsjo, Sweden, assignor to Misomex Aktiebolag of Ellen Keys Gata, Hagersten, Sweden
Filed Jan. 23, 1970, Ser. No. 5,285
Claims priority, application Sweden, Feb. 4, 1969, 1459/69
Int. Cl. B43l 13/24
U.S. Cl. 33—19 A **10 Claims**



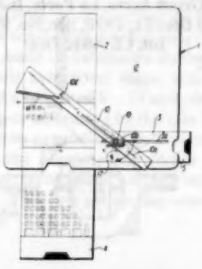
In a ruling machine of the type in which a recorder pencil is carried by a carriage which is moved in accordance with a scanner, an arrangement for enlarging or reducing the distance travelled by the recorder pencil relevant to the scanner to thereby counteract distortions which would otherwise arise when the pattern made by the recorder pencil is stretched as when mounted on a cylinder of a printing press. A threaded shaft extends in the direction in which enlargement or reduction is to take place, a nut threadedly but non-rotationally engages the shaft for movement therealong and a projection from the carriage extends into the path of travel of the nut and is urged thereagainst by a spring. A wedge member is positioned between the projection and the nut. This wedge member rides along a guide bar to vary its position between the nut and the projection so that the distance between the nut and the projection varies as the nut travels along the shaft.

3,686,764
INTERPRETATION METHOD FOR USE IN X-RAY DIFFRACTION AND X-RAY FLUORESCENSE ANALYSIS
William M. Oesterritter, 2220 Wrocklage Ave., Louisville, Ky.
Filed April 10, 1970, Ser. No. 27,399
Int. Cl. B43l 7/00
U.S. Cl. 33—1 C **6 Claims**



A simple and efficient means is provided in X-ray fluorescence and X-ray diffraction for deriving interplanar spacings and wave lengths, or characteristic elements, determined from the data by the Bragg equation. The apparatus contemplates a data background sheet and an interpretive sheet. The data on the background sheet is in the form of a plot of either an X-ray diffraction pattern or an X-ray fluorescense pattern. The interpretive sheet is a transparent sheet superimposable over the data sheet with indicia imprinted in scale thereacross.

3,686,765
CALCULATOR FOR DETERMINING REQUIRED EXTENSIBLE CRANE BOOM FOR USE ON A PARTICULAR JOB SITE
David G. Ghysels, Hagerstown, Md., assignor to Grove Manufacturing Company, Shady Grove, Pa.
Filed Sept. 28, 1970, Ser. No. 76,075
Int. Cl. B43l 7/00
U.S. Cl. 33—97 **6 Claims**



A calculator for determining the necessary extensible, mobile, crane boom required for use on a particular job site

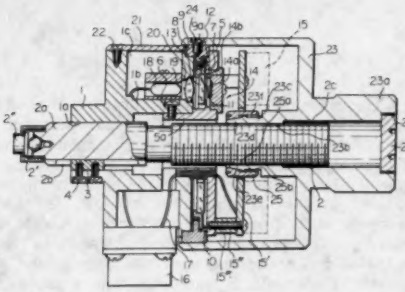
wherein a pair of cooperating slides are carried within an envelope having two window openings for exposing the respective slides. One window opening is provided with indicia representing the height of a static structure, the slide exposed by the window carrying indicia representing a static structure, such as a multi-story building and the widths of the buildings, the other slide being disposed perpendicular to the first slide and carrying indicia representing a mobile crane boom having the boom slidably and rotatably mounted thereon, the window for exposing the second slide containing indicia representing the distance the mobile crane is to be positioned from the building.

3,686,766

DIGITAL MICROMETER

Sakuzo Matumoto, Tokyo, Japan, assignor to Olympus Optical Co., Ltd., Tokyo, Japan

Filed June 9, 1970, Ser. No. 44,739
Claims priority, application Japan, Feb. 4, 1970, 45/31688
Int. Cl. G01b *3/18*
U.S. Cl. 33—166 **6 Claims**



Digital micrometer having an encoder rotor and an encoder stator. The encoder stator is fixedly secured to the micrometer which the encoded rotor is rotatably mounted in the micrometer but is prevented from moving axially so as to cooperate with the stator. The rotation of the rotor is correlated to the axial movement of a lead screw for the measurement through a thimble so that the measured value is obtained by the cooperation of the rotor with the stator.

3,686,767

TAPE MEASURE AND RULE

Werner Duda, 129 Weaver Road, West Sayville, N.Y., and Robert Carter, 5 John St., Shoreham, N.Y.

Filed May 12, 1970, Ser. No. 36,516
Int. Cl. G01b *3/02*; B65h *75/16*
U.S. Cl. 33—138 **10 Claims**

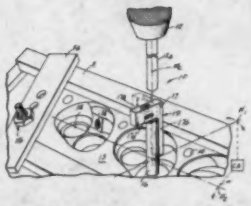
A tape measure having a reel and an outer casing. The outer casing is generally elliptically shaped and is adapted to be held in the hand with the tape extending tangentially from the reel through a generally elongated slot in a sector of its elliptical peripheral wall portion intermediate the minor and major axes of the casing. This construction permits the tape to be withdrawn from the casing along a line which extends substantially parallel to the major axes of the casing without bending of the tape.

3,686,768

TWO-PLANE BORE LEVELING DEVICE

Marvin H. Humbert, Cedar Rapids, Iowa, assignor to Cedar Rapids Engineering Company, Cedar Rapids, Iowa

Filed June 30, 1971, Ser. No. 158,192
Int. Cl. B27g *23/00*
U.S. Cl. 33—185 R **5 Claims**



A two-plane bore leveling device for use in aligning bores in various structures, such as valve guides in automotive engines during reconditioning and/or salvage operations. The leveling device comprises a try square having a horizontal leg and a vertical leg. Two spirit level vials are positioned within the horizontal leg for top and side viewing. The vertical leg is provided with an interiorly hollow sleeve portion for receiving a shaft fitting within the bore to be aligned. Leveling is accomplished by inserting an appropriate shaft within the bore, sliding the sleeve portion of the leveling device onto the shaft and tilting the bore-containing structure to level in one plane. The horizontal leg of the leveling device is then rotated 90° on the shaft and the bore-containing structure is tilted to level in the other plane.

3,686,769

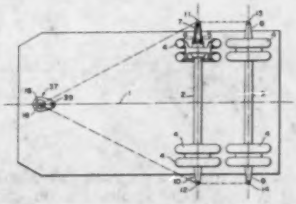
Patent Not Issued For This Number

3,686,770

APPARATUS FOR ALIGNING TRAILER AXLES

Lawrence D. Davis, 102 Pleasant St., Ashland, Mass.

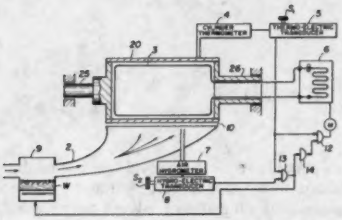
Filed July 21, 1970, Ser. No. 56,821
Int. Cl. G01b *3/10*
U.S. Cl. 33—193 **8 Claims**



Apparatus for aligning trailer axles without removing the wheels on the axles comprising a mounting that fits on the wheel hub cap and extends from the hub cap so that its outer end forms an unobstructed line with the trailer king pin. The outer end of each mounting has a rotatable tape mount for accommodating a measuring tape. The front trailer axle is

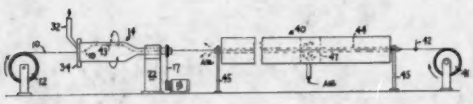
aligned by measuring and equalizing the distance from the king pin to each outer end of the mountings on the front wheels. The aligned front axle comprises a reference line for aligning the rear axle.

3,686,771
HUMIDITY REGULATING SYSTEM FOR PRINTING MACHINES
Helmut Schone, Radebeul; Horst Henkenhae, Dresden; Lothar Vetter, and Horst Krause, both of Radebeul, all of Germany, assignors to Veb Polygraph Leipzig, Kombinat fur polygraphische Machinen und Ausriestungen, Radebeul, Germany
Filed Dec. 4, 1970, Ser. No. 95,229
Claims priority, application Germany, July 23, 1970, P 15 14 903.0
Int. Cl. F26b *13/10*
U.S. Cl. 34—44 6 Claims



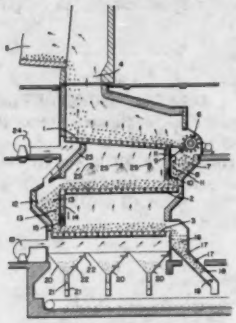
A system for regulating the amount of humidity, and mainly the thickness of a humidity film, present on printing cylinders, and for thereby influencing acceptance or rejection of printing media. A first subsystem measures and regulates a first characteristic and particularly the temperature that prevails on the cylinder surface or in the layer of air, directly at this surface. A second subsystem measures and regulates a second characteristic and particularly the humidity of a stream of air, supplied to said surface, or the flow rate of this stream, or both. The two sub systems are pneumatically interconnected or electromechanically linked.

3,686,772
APPARATUS FOR DRYING TEXTILE MATERIAL
Warren W. Drummond, Allison Park, Pa., assignor to PPG Industries, Inc., Pittsburgh, Pa.
Division of Ser. No. 829,521, June 2, 1969, Pat. No. 3,577,872. This application Oct. 29, 1970, Ser. No. 85,253
Int. Cl. F26b *13/00*
U.S. Cl. 34—154 2 Claims



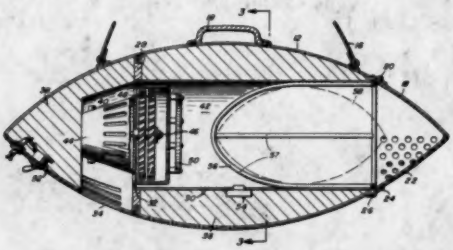
Textile material to be dried is passed through a heated tubular element in a generally longitudinal direction. Means are provided to impart lateral movement to the textile during its passage through the tubular element to prevent sticking to the walls of the tube. Means to heat the tubular element, retrieve the textile material and to introduce air countercurrent to the longitudinal direction of the textile path are shown. The use of apparatus employing a plurality of tubular elements and a common air manifold to feed each element is also disclosed.

3,686,773
MATERIAL COOLER
Paul Schreiner, 207 Gross-Hansdorf, Germany, assignor to Fuller Company
Filed May 24, 1971, Ser. No. 146,368
Claims priority, application Germany, May 26, 1970, P 20 26 261.7
Int. Cl. F26b *19/00*
U.S. Cl. 34—203 5 Claims



A cooler for hot material such as cement clinker which includes a plurality of superimposed heat exchanger sections. Each of the sections includes an arrangement such as a series of alternately fixed and movable grates for moving material from the inlet of the section to the outlet of the section. A material breaker is positioned between the initial heat exchanger section and the second heat exchanger section. A material lock is provided between each section. The material is cooled by air flowing upwardly through the grate and material. Cooling air is introduced into a plenum chamber beneath the last section, flows upwardly through the material in that section and through the material in the succeeding sections and is eventually sent to the furnace as heated combustion air. Before passing through the initial section, water may be sprayed into the air to cool the same.

3,686,774
FOOTBALL DRYER
Clarence C. Beadle, Jr., Morgan City, La., assignor to Raymond R. Beadle, Sr. and Arthur G. Beadle, Morgan City, La., a part interest to each
Filed Oct. 5, 1970, Ser. No. 78,094
Int. Cl. F26b *19/00*
U.S. Cl. 34—227 3 Claims



A hollow housing defining a generally central cavity therein for receiving a football to be dried. The cavity opens outwardly of one end of the housing and the housing includes a cover for the open end of the cavity provided with air outlet openings. The other end of the housing remote from the cover includes an air inlet opening and an air blower assembly is disposed within the housing for pumping air therethrough from the air inlet openings to the air outlet openings. Further,

the housing additionally includes internal heating coils over which the air being pumped through the housing is passed.

3,686,775

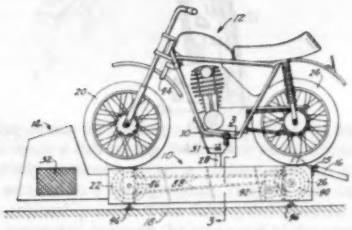
Patent Not Issued For This Number

3,686,776

MOTORCYCLE RIDING SIMULATOR

Christian W. Dahl, Village of Golden Valley, Minn., assignor to Hartzell Corporation, St. Paul, Minn.

Filed April 12, 1971, Ser. No. 132,974
Int. Cl. G09b 9/04
U.S. Cl. 35—11 **6 Claims**



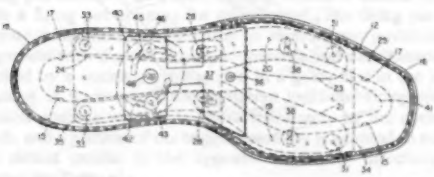
There is provided a motorcycle riding simulator comprising a supporting structure having crown rolls rotatably mounted thereon in longitudinally spaced parallel relation to one another for engagement with the front and rear wheels of a motorcycle to enable control and balancing of the cycle as the cycle front wheel is turned, and further having a motorcycle engaging center post swingably mounted on the supporting structure at its lower end and having a motorcycle engaging bracket pivotally attached to its upper end, the post being mounted for limited vertical movement and having means automatically controlling the downward and swinging movement thereof in accordance with the force applied to the post.

3,686,777

SHOE CONSTRUCTION

Henri Elliott Rosen, 64 Long Wharf, Boston, Mass.

Continuation-in-part of Ser. No. 716,172, March 26, 1968, Pat. No. 3,541,708, which is a continuation-in-part of Ser. No. 612,003, Jan. 26, 1967, Pat. No. 3,404,468. This application Nov. 23, 1970, Ser. No. 91,703
Int. Cl. A43b 00/00
U.S. Cl. 36—2.5 B **14 Claims**



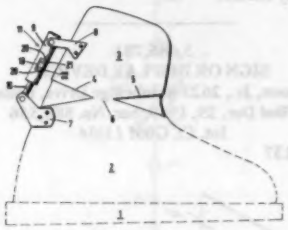
A footwear construction incorporating widthwise adjustability in at least a part of the shoe to enable one shoe to be fitted to feet of different widths.

3,686,778

SKI BOOT OR SHOE

Gerhard Hornung, Singen, Germany, assignor to Justus Rieker & Co., Tuttlingen, Germany

Filed Dec. 15, 1970, Ser. No. 98,257
Claims priority, application Germany, Dec. 23, 1969, P 19 64 402.1; May 23, 1970, P 20 25 283.9
Int. Cl. A43b 00/00
U.S. Cl. 36—2.5 AL **9 Claims**



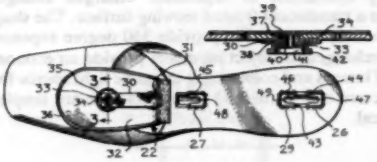
A ski-boot, molded from rubber or plastics, in which the neck portion of the upper is bendable relative to the foot portion. A connection, such as a piston and cylinder arrangement, prevents relative bending of the two portions from an initially chosen infinitely adjustable fixed position until the bending force exceeds a pre-set value. Any subsequent bending is limited by adjustable stops, and the pre-set value of bending force can also be adjusted.

3,686,779

FOOTWEAR

Maxwell Sachs, 887 W. Roxbury Parkway, Chestnut Hill, Mass.

Continuation-in-part of Ser. No. 813,140, April 3, 1969, Pat. No. 3,548,521. This application Dec. 21, 1970, Ser. No. 100,235
Int. Cl. A43b 23/28
U.S. Cl. 36—2.5 W **48 Claims**



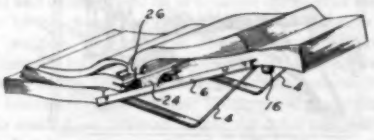
Footwear is disclosed with parts for attaching upper sections, heels, and layers of material to the sole and for making them detachable.

3,686,780

TILTING RACK FOR BINDER FILES

Robert F. Sheehan, Granby, Mass., assignor to National Blank Book Company, Inc., Holyoke, Mass.

Filed Nov. 23, 1970, Ser. No. 91,981
Int. Cl. A47b 23/00
U.S. Cl. 40—104.14 **8 Claims**



A tilting rack for mounting groups of loose leaf binder files and the like for reference purposes on a desk top or other sup-

port surface, comprising a panel member having angled leg members fixed at the underside thereof to support the panel for end to end rocking movement into oppositely tilted positions on the support surface. Tracking channels along the panel sides are provided to slidably and pivotally engage rod members protruding from the ends of binder file mounting devices designed for hanging suspension file units. The binders may be turned over and shifted on the panel and the panel tilted to obtain the most convenient position for access to the contents of any binder.

3,686,781

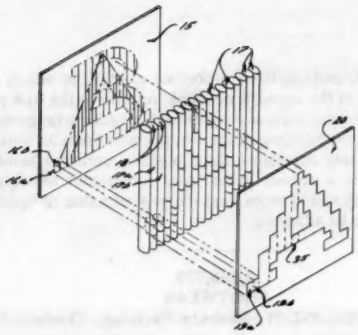
SIGN OR DISPLAY DEVICE

Hugh C. Calhoun, Jr., 2623 Bainbridge Drive, Dallas, Tex.

Filed Dec. 29, 1969, Ser. No. 888,556

Int. Cl. G09f 13/04

U.S. Cl. 40—137 12 Claims



A sign or display device providing changeable indicia, or movement of scenes or figures, with color changeable as desired, is produced by means of linear indicia on an object member, aligned with elongate optical magnifying members, preferably cylindrical to reproduce enlarged changeable images on a translucent frosted viewing surface. The shape of the device may be varied to provide 360 degree exposure or less. Interchangeable object members provide an economical variety of images and colors using the same light source for all. The structure and its method of manufacture are simple and economical.

3,686,782

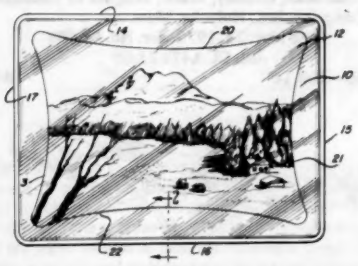
INFLATED PICTURE HOLDER

Wallace A. Erickson, c/o John Hancock Center, Apt. 8908, Chicago, Ill., and Donald K. Safstrom, 3122 Belwood Lane, Glenview, Ill.

Filed June 1, 1970, Ser. No. 41,834

Int. Cl. G09f 1/12

U.S. Cl. 40—152 14 Claims



An inflatable holder adapted to hold a substantially rigid inner member in a substantially fixed position when the holder is inflated, the holder comprising a plurality of flexible plastic sheets whose marginal edges, when the holder is deflated, are spaced from the inner member whereas upon inflation, the edges will bear against the inner member in such a manner to hold the inner member in a substantially fixed position.

3,686,783

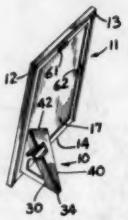
FRAME AND EASEL BACK ASSEMBLY

Leon M. Levy, Chicago, Ill., assignor to Condecor, Inc., Mundelein, Ill.

Filed March 12, 1971, Ser. No. 123,600

Int. Cl. G09f 1/12

U.S. Cl. 40—152.1 7 Claims



An easel back for supporting a photo frame in which the structure includes a backing member of hollow, open construction having a triangular supporting member hinged to an inner lateral edge and a triangular bracing member hinged to the supporting member with the members being folded at the hinges and locked to form a rigid supporting leg of tetrahedron shape. The same supporting tetrahedron serves as a leg to stand the frame for either horizontal or vertical viewing. The parts are preferably molded as a single, integral unit employing plastic having a high degree of flexibility and with scorelines molded of reduced thickness for facilitating relative bending.

3,686,784

LATERN SLIDE COVER

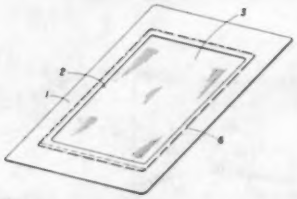
Karl Hirsch, Klagenfurt; Wilhelm Riedl, Klagenfurt; Siegmund Winkler, Wolfnitz, and Hans Pirker, Portschach, all of Austria, assignors to Firma Hirsch Plastikwaren Karl Hirsch OHG, Klagenfurt, Austria

Filed Oct. 7, 1970, Ser. No. 78,671

Claims priority, application Austria, Oct. 20, 1969, 4A 9880/69

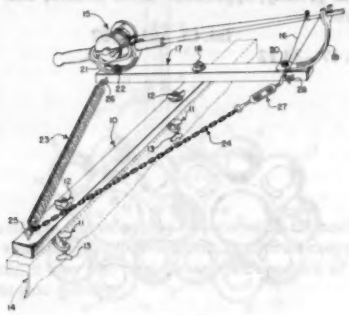
Int. Cl. G09f 1/10

U.S. Cl. 40—159 2 Claims



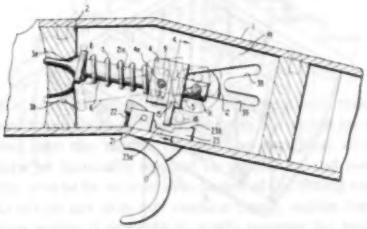
A frame has an inner edge, which has four sides defining an opening. A first leaf is joined to said frame at four sides of said inner edge. A second leaf is joined to said frame only at three sides of said inner edge.

3,686,785
FISHING DEVICE
John L. Dixon, 323 Hawthorne Court, Lake Bluff, Ill.
Filed Feb. 26, 1971, Ser. No. 119,139
Int. Cl. A01k 97/00
U.S. Cl. 43—15 7 Claims



A fishing device for holding a fishing pole or rod and setting the hook upon a fish taking the bait or hook comprising an arm pivotally mounted about a vertical axis on a support member secured to a boat gunwale. The arm includes holder means to releasably support the fishing rod thereon. A coiled spring is connected between the inner end of the arm and the support member and is held tensioned by a flexible member having a hook on one end engaging an eyebolt in the outer end of the arm. The fishing line engages the hook and a pull on the line releases the hook, causing the spring to jerk the arm and rod to set the hook in the fish's mouth.

3,686,786
LOCK FOR DOUBLE-BARRELED FIREARM
Hans Klug, Tauberbischofsheim, Germany, assignor to Firma Wilhelm Meyer, Nuernberg, Germany
Filed Sept. 23, 1970, Ser. No. 74,597
Int. Cl. F41c 19/00
U.S. Cl. 42—42 10 Claims



A two barrel firearm with the barrels arranged one above the other or in side by side relation is provided with a single firing pin assembly in a lock housing behind a breech block with a firing pin opening for each barrel. The firing pin assembly is adapted to be pivoted to each of two positions in alignment with the two firing pin openings and simultaneously cocked by a cocking knob guided in a guide slot in the lock housing. A transversely sliding detent locks the firing pin in cocked position when it is drawn rearwardly by the cocking knob, and a portion of the trigger assembly is adapted to move the detent means in the opposite transverse direction to release the firing pin.

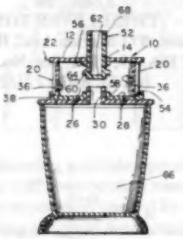
ERRATUM

For Class 43—15 see:
Patent No. 3,686,785

3,686,787
FISHING TACKLE
Walter E. Milovich, South Bend, Ind., assignor to Ace Tool Engineering Co., Inc., South Bend, Ind.
Filed Sept. 14, 1970, Ser. No. 71,907
Int. Cl. A01k 93/00
U.S. Cl. 43—44.9 7 Claims

Fishing tackle having a buoyant body formed from upper and lower molded parts assembled to define a sealed annular chamber within said upper part and a vertical central pocket open at its lower end and spanned at its top by a wall having a line receiving aperture. The lower part has a plurality of longitudinal ribs to provide greater weight at the lower part of the body than at the top part.

3,686,788
INSECT TRAP
Harold N. Braunhut, c/o Honey Toy Industries, 200 Fifth Ave., New York, N.Y.
Filed Sept. 3, 1970, Ser. No. 69,230
Int. Cl. A01m 1/10
U.S. Cl. 43—110 10 Claims

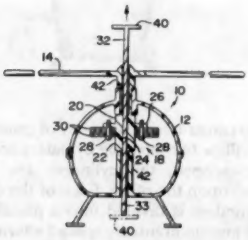


An insect trap constructed preferably of transparent plastic, including two hollow telescopable cylinders and a cylindrical plug. When telescoped, the cylinders are rotatably and slidably mounted upon the other. Each of the cylindrical side walls of the cylinders is divided into a plurality of longitudinally directed circumferentially spaced alternating slots and dependent segments. The segments of one cylinder are disposed and dimensioned so as to cover the slots of the other cylinder in the closed position, and uncover the slots in the opened position. The end wall of each cylinder is provided with a centrally located circular opening. The cylindrical plug is provided with a selected outer diameter to enable it to be slidably inserted in each circular opening, the plug being of a length to reach from one end wall to the other end wall when the cylinders are in the telescoped position. The plug may be lifted out of one of the circular openings to allow the captured insects to be transferred through the unpluged opening into another container.

3,686,789
MODULAR SPACE TOY
Joseph Polonyi, 4 Dartmouth St., Forest Hills, Queens County, N.Y.
Filed May 10, 1971, Ser. No. 141,489
Int. Cl. A63h 29/10
U.S. Cl. 46—43 17 Claims

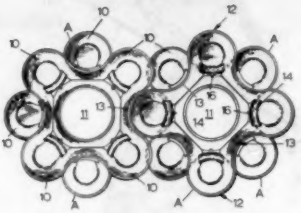
A modular bowl-shaped toy, preferably having straight or convexly flared sidewalls, with a ball for rolling circularly around the inside of the bowl module to simulate an orbiting spacecraft. The bowel module has an upward and inwardly turned rim forming a circumferential channel and, preferably, a substantially tangential passageway leading therefrom so that at high circumferential velocities the ball can enter the channel and escape from orbit through the passageway. Additional bowl modules of similar design can be connected by conduits to simulate both orbital and interplanetary space travel. A spring-biased launching device in the bottom of the bowl module may be used to propel the ball into a circular path around the inside of the bowl, and a movable barrier selectively prevents the ball from entering the tangential passageway.

3,686,790
TWIST LEVER TOY
Emanuel A. Winston, 871 Marion Ave., Highland Park, Ill.
Filed Feb. 19, 1971, Ser. No. 116,903
Int. Cl. A63h 27/12
U.S. Cl. 46—75 10 Claims



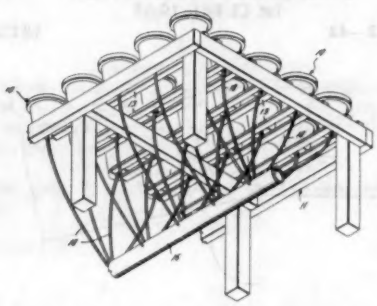
A mobile toy of the type designed to move over a surface or through the air and comprising an energy storing rotary element in the form of a flywheel which, when set into rotational motion, provides energy to propelling means thereby causing movement of the toy. The flywheel includes a hub with a centrally located channel designed to movably engage a driving means in the form of an elongated drive shaft having a convoluted outer surface. Linear movement of the shaft within the channel relative to the flywheel causes rotation of the flywheel due to the correspondingly shaped convoluted configurations of the exterior surface of the shaft at the surface of the channel.

3,686,791
WALLS, SCREENS AND THE LIKE
Kenneth Wilson Mills, Bolton, England, assignor to Vernon & Company (Pulp Products) Limited, Bolton, Lancashire, England
Filed Oct. 2, 1970, Ser. No. 77,544
Claims priority, application Great Britain, Oct. 20, 1969, 51,285/69
Int. Cl. A01g 9/02
U.S. Cl. 47—34.12 6 Claims



The invention provides a constructional unit comprising a plurality of pockets or pots for containing growing media for plants arranged around and extending from a central hole, and formed with means for registering same in alignment with subjacent and superjacent fellow units whereby structures in the form of columns or walls may be erected with pockets extending therefrom for the reception and growing of plants therein.

3,686,792
SYSTEM FOR SUPPLYING LIQUIDS TO POTTED PLANTS
William G. Barfield, 137 Tropical Lane, Corpus Christi, Tex.
Filed Oct. 5, 1970, Ser. No. 77,949
Int. Cl. A01g 27/00
U.S. Cl. 47—39 8 Claims

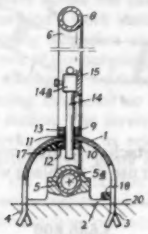


A plurality of pot plants are supported on generally the same level and liquid is supplied thereto by means of a main distribution conduit leading from a container for the liquid and a plurality of feeder conduits each leading from the main conduit to an individual pot plant.

3,686,793
PIVOTED GATE
Jean Meniolle d'Hautrhuille, Boulevard Henri Dunant, St. Marcel, Marseille, France
Filed April 20, 1970, Ser. No. 29,921
Int. Cl. E06b 11/00
U.S. Cl. 49—131 1 Claim

A vertical pivotable gate has a base with a part-circular anchoring plate and a gate member movable into raised and lowered positions, the gate member having cross-members

above and below the anchoring plate and all three being apertured to receive a longitudinally slidable latch bolt serving to hold the gate member in the raised position. Upper and lower



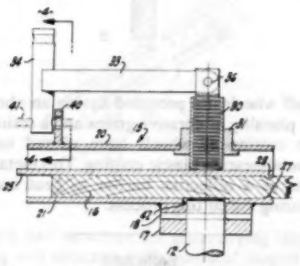
preferably resilient end stops may be secured on the anchoring plate to be abutted by a cross-member. For further support of the latch bolt, it may also pass through an aperture of a lock casing on the gate member.

3,686,794

REPLACEABLE TRAFFIC BARRIER GATE

Wayne Y. Sakamoto, Granada Hills, Calif.; Stephen Roger Westphal, Glendale, Calif.; and Franklin I. Fletcher, Granada Hills, Calif., assignors to Gaby Anne Corporation, San Francisco, Calif.

Filed March 19, 1970, Ser. No. 21,109
Int. Cl. E05c *15/02*
U.S. Cl. 49—141 7 Claims



A traffic barrier gate, adapted to be selectively raised from or lowered to a barrier position, wherein a wooden barrier arm is inserted into the mouth of a fitting provided with a jaw which may be manually opened to permit an end portion of the barrier arm to be moved into or out of the fitting mouth, or closed to retain the arm end portion firmly within the fitting. The device makes it possible to easily remove the stub of the arm from the fitting whenever the arm is broken off, and to quickly reinsert and lock into place an end of the remaining or a new arm.

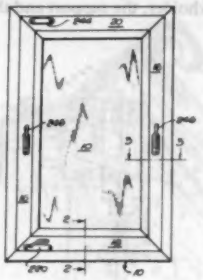
3,686,795

WINDOWS AND SIMILAR PANEL-SUPPORTING STRUCTURES

Robert L. La Barge, Richmond, Ind., assignor to Aluminum Company of America, Pittsburgh, Pa.

Filed Feb. 28, 1967, Ser. No. 619,443
Int. Cl. E05f *11/28*; E06b *1/32*
U.S. Cl. 49—345 1 Claim

Thermally insulated windows and similar panel structure exposed to differential temperature conditions on opposite sides may comprise a fixed metal frame and, insulated therefrom, a movable metal frame supporting a window glass or similar panel. The movable frame is displaced into and out of venting association with and thermally insulated relationship to the fixed frame. Thermal insulation serving as weatherstripping between the frames provides a thermal barrier or break. It



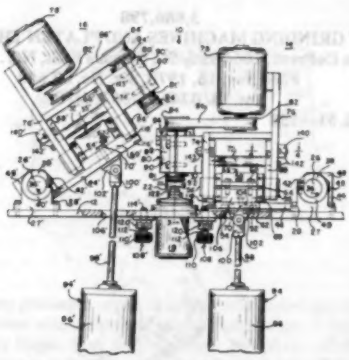
may be in connecting attachment to either the venting sash or the fixed frame, and in overlying relationship to the other in closed position.

3,686,796

MULTIPLE HEAD LENS PROCESSING MACHINE

James A. Clark, Mendon, N.Y., assignor to Bausch & Lomb Incorporated, Rochester, N.Y.

Filed July 2, 1970, Ser. No. 51,943
Int. Cl. B24b *5/00*
U.S. Cl. 51—3 22 Claims



A machine for performing multiple operations upon a lens material for forming a lens at a common mounting block has a plurality of spindleheads pivotally carried by a single base support thereby eliminating the need for mounting, dismounting and remounting the lens at each operational stage. The spindles carry tools, for example, for generating, lapping, edging and/or polishing a lens. The lens is mounted on a rotatable lens holder which is disposed in fixed axial relationship to the base mounts of the operational heads. A control system is provided for sequentially operating hydraulic actuators coupled for pivoting the head assemblies and for engaging the tools with the lens material for performing the sequenced operations.

3,686,797

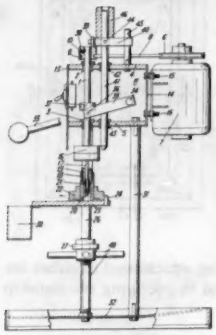
MACHINE FOR MACHINING INTERNAL SURFACES OF WORKPIECES

Cecil I. Taylor, Buckingham, England, assignor to Leslie Hartridge Limited, Buckingham, England

Filed July 28, 1970, Ser. No. 58,953
Int. Cl. B24b *7/00*, *9/00*
U.S. Cl. 51—34 K 8 Claims

The invention resides in a machine for use in machining internal surfaces of workpieces comprising means to hold a

workpiece which is to be machined, a machine spindle, means mounted at one end of the machine spindle to hold the tool so that the tool rotates when the machine spindle rotates, a support for the workholder, the support and the tool holder being



relatively movable towards and away from each other, and means associated with the machine spindle adapted to apply intermittently variable axial pressure to the tool in a direction towards the workholder support during the revolutions of the machine spindle.

3,686,798

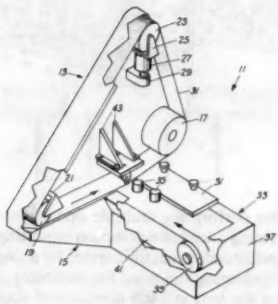
BELT GRINDING MACHINES AND PLATEN THEREFOR

Charles CoPresti, 1064 99th St., Niagara Falls, N.Y.

Filed Nov. 16, 1970, Ser. No. 89,680

Int. Cl. B24b *21/08, 21/10*

U.S. Cl. 51—138 **5 Claims**



A platen includes a narrow pressure strip of a hard material rigidly mounted on a supporting portion of the platen. The grinding machine utilizing the platen is the type in which work is fed in a direction normal to the movement of the abrasive belt. The platen is rigidly tensioned against the abrasive belt so that narrow pressure portion urges the abrasive belt against a workpiece.

3,686,799

CONVERTIBLE SAW BLADE

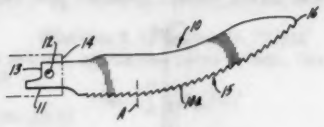
Myrle M. Doty, 818 Stevens Ave., Sycamore, Ill.

Filed Feb. 25, 1971, Ser. No. 118,890

Int. Cl. B24b *25/00*

U.S. Cl. 51—181 R **11 Claims**

A convertible saw blade which may have a curvilinear cutting portion for self starting. The cutting edge of the blade is provided with customary teeth having angular sets to the opposite sides of said body. The teeth are used for relatively soft material. A cutting rod of wear resistant material with abrasive



particles therein is detachably fitted over the teeth between the tips of the teeth for use of the blade with harder materials.

3,686,800

ABRASIVE CUTTING-OFF WHEELS HAVING METAL COATED SIDES

Charles V. Rue, Clinton Township, and John F. Busch, Tiffin, both of Ohio, assignors to International Telephone and Telegraph, Corporation, New York, N.Y.

Filed Dec. 22, 1969, Ser. No. 887,000

Int. Cl. B24d *5/04*

U.S. Cl. 51—206 R **9 Claims**

Cutting-off wheels are provided having an abrasive matrix including a plurality of abrasive grains and a resinous bonding agent. The cutting-off wheels have affixed to both sides thereof a metal-bearing plastic coating. This metallized plastic coating acts as a reflective barrier to heat transmitted by radiation during the cutting process.

3,686,801

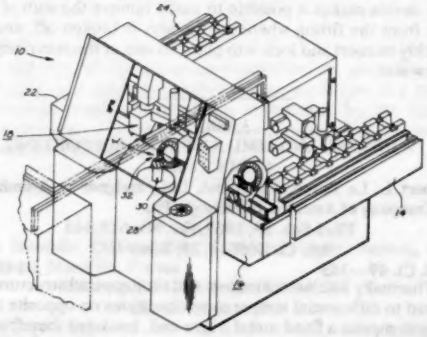
AUTOMATIC SERVER FOR MACHINE FOR RUNNING PAIRS OF GEARS TOGETHER

Charles G. Ellwanger, Rochester, N.Y., assignor to The Gleason Works, Rochester, N.Y.

Filed Dec. 16, 1970, Ser. No. 98,536

Int. Cl. B24b *47/02*

U.S. Cl. 51—215 R **25 Claims**



For a machine for running pairs of gears together, e.g., for lapping or testing one pair at a time, there is provided an in-

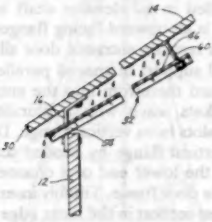
coming magazine, an outgoing magazine, a conveyor device which moves gear pairs toward the front of the incoming magazine; a conveyor device which moves gear pairs toward the back of the outgoing magazine; a transfer device which moves two pairs of gears across the machine at once: taking one pair from the machine's work station and another from the front of the incoming magazine and shifting these pairs, respectively, to the front of the outgoing magazine (or to a reject chute) and the machine's work station. The gears are oriented in the incoming magazine so they will mesh when mounted at the work station. The server is responsive to tests performed at the work station to reject and replace any damaged or improperly paired gears or any gear pair improperly installed at the work station and to indicate the reaons for rejection on a register which shifts as additional pairs are rejected so the machine operator can quickly discern which gear pair was rejected for which reason. A telescoping cover encloses the work station during the lapping operation to prevent contamination of the transfer mechanism.

3,686,802

AUXILIARY ROOF STRUCTURE FOR GRAIN DRYING BINS

Sietmann, Vernon H., Laurel, Iowa

Filed Dec. 11, 1969, Ser. No. 884,186
Int. Cl. E04b 7/18; E04d 13/00
U.S. Cl. 52—15 **4 Claims**



An auxiliary roof structure for grain drying bins including an upstanding wall structure with a conical shaped roof structure supported thereon. The auxiliary roof structure is comprised of a plurality of roof panels connected together to form a frusto-conical shaped auxiliary roof portion positioned below the lower ends of the roof structure to catch any accumulated condensation which might fall from the inside surface of the lower length of the roof structure and to convey the same outwardly of the wall structure. Condensation collecting on the underside of the auxiliary roof portion will also be conveyed outwardly of the wall structure.

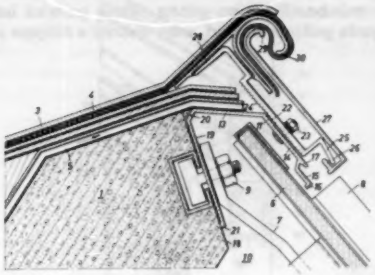
3,686,803

FACING OF THE ROOF EDGES IN SAW-TOOTH ROOFS OR SIMILAR ROOFS

Klaus Gobel, Zeughausstr. 41, Trier, Germany

Continuation of Ser. No. 712,889, Feb. 26, 1968, abandoned.
This application Feb. 9, 1970, Ser. No. 9,107
Claims priority, application Germany, Feb. 27, 1967, G 49414
Int. Cl. E04b 7/12, 7/02
U.S. Cl. 52—18 **3 Claims**

The invention serves to provide in a ridge roof, along the horizontal junctions between a sloping window and an adjoining roof structure, such as in a saw-tooth roof, facings which each comprise a vapor check profile strip arranged to permit escape of vapor pressures arising within sheathing overlying the adjacent roof structure and escape of condensation from



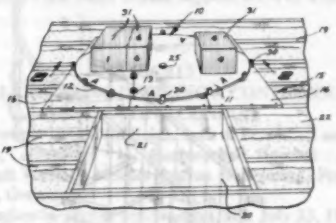
the window without such condensation penetrating to the sheathing.

3,686,804

SYSTEM AND APPARATUS FOR STORING PACKAGES

Laurence A. Browne, 3053 Oregon Ave. S., St. Louis Park, Minn.

Filed Oct. 8, 1970, Ser. No. 79,111
Int. Cl. E04b 5/00
U.S. Cl. 52—31 **3 Claims**



For storing packages or the like in an attic crawl space, having a trap door access opening circular platforms of diameter considerably larger than the maximum dimension of the access opening are rotatably mounted on horizontal floor sections covering the crawl space floor joists at locations which can be reached by a person standing at or in the trap door opening. Castors around the outer edge of each circular platform support it for easy rotation in either direction on these floors; and a pivot pin through the center of the platform and the floor on which the platform is supported serves to keep each platform positioned immediately adjacent the crawl space opening so that coded boxes or bundles can be stored thereon and easily reached, lazy Susan style. A chart, stored adjacent to the platforms and floors, is provided for indicating the nature and contents of each bundle. These circular platforms are each made up of two hinged pieces which, when in their folded over, collapsed condition, will fit through the maximum dimension of this crawl space opening.

3,686,805

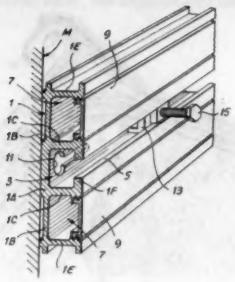
ASSEMBLIES FOR MOUNTING PANELS ON WALLS

Giancarlo Polferi, Pistoia, Italy, assignor to Ital-Bed Costruzione Letti e Affini S.r.l., Pistoia, Italy

Filed March 20, 1970, Ser. No. 21,517
Int. Cl. E04c 2/52; E04f 17/08
U.S. Cl. 52—64 **2 Claims**

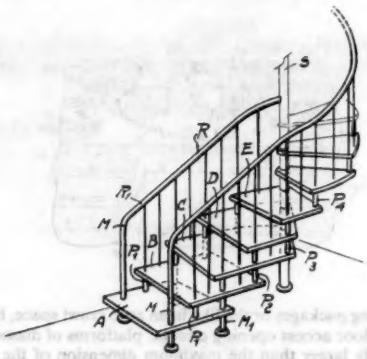
A wall-mounted panel assembly is formed by two elongated trunking members for carrying electrical conductors or fluid

conduits and the like, which are mounted on the wall to lie



horizontally and in vertically spaced relationship. A panel is then secured to span both trunking members.

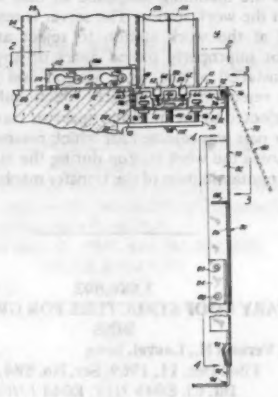
3,686,806
SPIRAL STAIRCASE WITH ACCESS WAY
Giuseppe Verderio, Gessate, Milan, Italy
Filed Jan. 9, 1970, Ser. No. 1,601
Int. Cl. E04f 11/02
U.S. Cl. 52—187 **5 Claims**



A spiral staircase designed to be located adjacent a wall. The staircase has a spiral section which is composed of a successive series of horizontal, progressively angularly displaced steps that extend radially outwardly equal distances from and are connected at their inner ends to a common central vertical axial support so that the spiral thereby formed is circular in plan, occupies a minimum of space and has no central inner void. In order that the entrance to and exit from the spiral staircase be disposed in convenient locations, at least one of the extremities of the staircase constitutes a series of steps that extend rectilinearly in progression from the spiral, outside of the circular area thereof as viewed in plan and constitutes an access ramp that is disposed parallel to the wall adjacent which the staircase is located. the access ramp has structure connecting the ramp in a continuous and regular manner to the spiral section so as to constitute an organic and statically integrated assembly therewith.

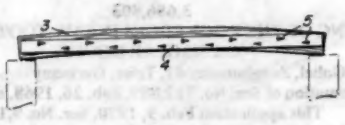
3,686,807
Patent Not Issued For This Number

3,686,808
DOOR FRAME, SILL AND FACIA CONSTRUCTION FOR ELEVATOR
Charles M. Loomis, Box 453, Arkansas City, Kans.
Filed March 15, 1971, Ser. No. 124,127
Int. Cl. B66b 13/30; E06b 1/04
U.S. Cl. 52—211 **11 Claims**



Mounted for vertical adjustment upon an angle member previously installed in an elevator shaft below an entrance opening thereof is an upward-facing flanged channel sill support upon which rests an entrance door sill. Secured at right angles to the sill support in spaced parallel relationship and projecting outward therefrom into the entrance opening are two angle brackets, each with a plurality of horizontally spaced keyhole slots in its vertical flange. Detachably secured to each such vertical flange by headed screws seated in the keyhole slots is the lower end of a channel door jamb of an elevator entrance door frame. Tiltably insertably into a groove of L-shaped cross-section in the inner edge of the sill is the L-shaped upper end flange on an upper facia panel. Slidably mounted on the upper facia panel for vertical adjustment relatively thereto is a lower facia panel, the lower edge of which rests upon the upper edge of the unfolded Z-shaped hanger head of the elevator entrance structure of the floor immediately below.

3,686,809
REINFORCED WOOD FLOOR SECTIONS
Skuli Walter Lindal, 9004 S. 19th St., Tacoma, Wash.
Filed Jan. 30, 1970, Ser. No. 6,990
Int. Cl. E04b 5/12
U.S. Cl. 52—223 **3 Claims**



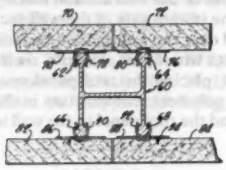
Decking for roofs and floors, and a method of manufacture thereof, in which a decking section comprises a plurality of boards of forcibly bent configuration secured side-by-side and retained in their bent configuration by metal strips which may be provided with integral punched-out projections.

3,686,810

SNAP ON DRYWALL FASTENING SYSTEM

Charles R. Allen, 551 Elinor Dr., Fullerton, Calif.

Filed Nov. 5, 1970, Ser. No. 87,124
Int. Cl. E04b 1/343, 1/40
U.S. Cl. 52—243 22 Claims



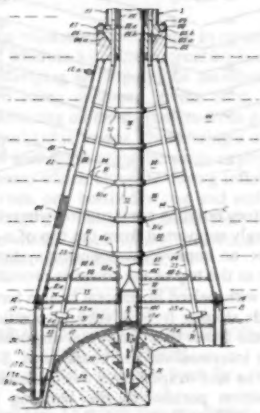
A building wall or other partition and a system for making such partitions in which individual wallboards or panel members can be removed and rearranged by being simply snapped into place and removed from studs is disclosed. The wallboards are held in position by resilient fastener clips which receive beads formed on supporting beams or studs.

3,686,811

SPACED MULTI-WALL CONSTRUCTION UNIT

Charles W. Hayes, 2334 Haldare St., Houston, Tex.

Filed Feb. 9, 1970, Ser. No. 9,657
Int. Cl. E04b 1/22; E04h 7/22
U.S. Cl. 52—233 7 Claims



A construction unit for constructing large pressure vessels such as offshore platforms and other pressure vessels which are subjected to high internal and/or external pressures wherein the construction unit comprises a multi-wall structure having a plurality of laterally spaced walls joined together at their upper and lower ends, respectively, and at their opposite sides to form an enclosure, and having a plurality of tensioning means for prestressing the construction unit prior to filling the enclosure with aggregate, concrete, grout or other suitable substantially incompressible material. The invention also includes the method of erecting off-shore vessels constructed of the spaced multi-wall construction units.

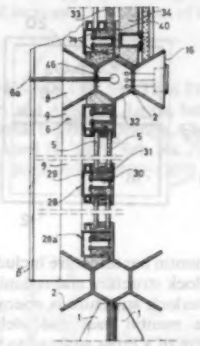
3,686,812

STRUCTURE CONSISTING OF PREFABRICATED PARTS

Eberhard G. Rensch, Lerchesbergring 24, 6 Frankfurt am Main, Germany

Filed Dec. 19, 1969, Ser. No. 886,655
Claims priority, application Germany, Dec. 23, 1968, P 18 16 647.7
Int. Cl. E04b 2/60
U.S. Cl. 52—274 11 Claims

A building skeleton, rising from a foundation, comprises columns of hexagonal profile with outwardly radiating vertical ribs extending from the corners of the hexagon, these columns being interconnected by beams detachably bolted to certain of their ribs. The foot of each column, anchored to the foundation by straps partly imbedded therein, abuts an end of a horizontal locating profile resting on the foundation which may also support a window pane, or wall paneling along with intermediate posts, in the space between two columns; the bottom plate of the profile terminates in an outwardly sloping shelf for the run-off precipitation. The beams at the top of the columns are in the form of C-channels disposed in back-to-back pairs, their flanges carrying a roof structure while the lower flanges of the inner beams support slabs of a false ceiling.

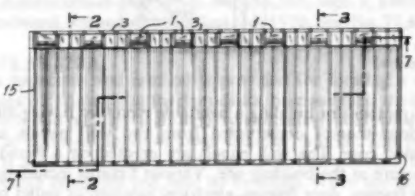


3,686,813

WALL COVERING DEFINING A CONTINUOUS VENTILATING CONDUIT

Heinz Breitwieser, and Otto Heinz, both of Frankfurt am Main, Germany, assignors to Farbwerke Hoechst Aktiengesellschaft vormals Meister Lucius & Bruning, Frankfurt am Main, Germany

Continuation-in-part of Ser. No. 861,212, July 23, 1969, abandoned, which is a continuation-in-part of Ser. No. 648,755, June 26, 1967, abandoned. This application May 4, 1970, Ser. No. 34,242
Int. Cl. E04b 1/70; E04d 3/30, 3/362
U.S. Cl. 52—303 4 Claims

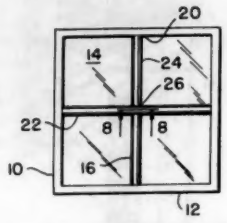


A wall shingle consisting of a profiled panel having at an upper, horizontal edge means for fixing the panel to a wall. At the lower edge, the shingle has means for complementary connecting to a shingle below it so that a run of shingles may be extended upwardly. On the vertical edges the shingle has means for interconnecting with a complementary edge of an adjacent shingle. Conveniently, one edge is of a tongue and other of a groove construction of a particular type. The configuration and shape of the shingles is such that both the vertical and horizontal run of the shingles provides for a continuous air-space between the thus defined wall covering and the wall.

3,686,814
FALSE WINDOW MUNTIN BAR STRUCTURE

Richard N. Anderson, Owensboro, Ky., assignor to V. E. Anderson Mfg. Co., Owensboro, Ky.

Filed Feb. 2, 1970, Ser. No. 7,452
Int. Cl. E06b 3/30, 9/01; E04c 2/42
U.S. Cl. 52—456 13 Claims

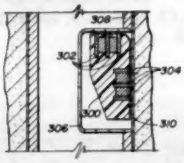


False window muntin bar structure including unique muntin bar member interlock structure and retaining clip structure is disclosed. The interlock structure is operable in conjunction with hollow false muntin bars and includes an interlock member in the form of a cross adapted to fit within intersecting false muntin bar members with one end of the cross extending in each direction of extent of the intersecting false muntin bar members. The retainer clip for the false muntin bar structure includes a central abutment portion against which an end of the muntin bar member is abutted, a retaining portion extending from one side of the abutment portion for securing the end of the muntin bar member thereto, and a barbed portion extending from the other side of the abutment portion of the retainer clip for securing the retainer clip to the frame of a window in which the false muntin bar structure is installed. Modifications of the false muntin bar interlock member and the retainer clip are disclosed.

3,686,815
METHOD FOR BUILDING CONSTRUCTION

Robert J. Von Bose, 3102 Roosevelt Dr., Arlington, Tex.

Filed Feb. 19, 1970, Ser. No. 12,588
Int. Cl. E04g 17/04
U.S. Cl. 52—743 13 Claims

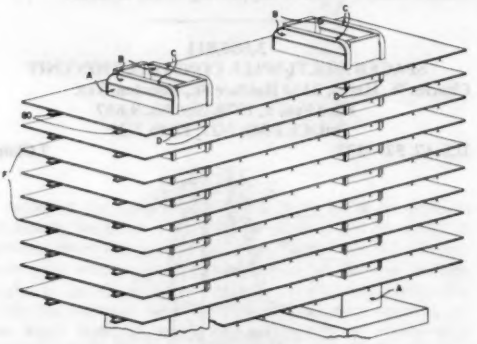


A method for building a habitable structure having all wall sections thereof constructed from two wall panels and a foamed core. The wall panels are erected on a foundation structure at the building site. Various fixtures including window frames, door frames, electrical junction or outlet boxes, water and sewer piping are installed between the wall panels and project into suitable openings in the wall panels. Construction forms are used to backup the wall panels. The construction form has a sheet of magnetizable material contacting the outer surface of the wall panel. The various fixtures are magnetically attached to the wall panels to hold the fixtures in place during the remainder of the construction process. After two wall panels, the various fixtures utilized therewith and two backup forms are erected. The space between the wall panels not occupied by fixtures is filled with a foamed in situ, synthetic, polymeric composition. After the foamed composition has partially solidified, the forms are removed leaving a completed wall section erected on the foundation structure. The foamed composition bonds the two wall panels together in a predetermined spaced relationship, bonds the fixtures in place and also bonds the wall section to the foundation structure. This type of wall panel can be installed either on the interior of a building structure or can be installed at the periphery of the foundation structure by using an exterior wall panel on one side of the wall section and by using an interior wall panel on the inward side of the wall section. A roof panel can be installed over the wall section by foaming the polymeric composition to within, for example, six inches of the top of the wall panels, placing the roof panel over the wall section and foaming a polymeric composition in the remaining six or so inches to bond the roof panel to the wall section.

3,686,816
BUILDING SUSPENSION APPARATUS

Ibrahim Hidayet Erbil, Santa Clara, Calif., assignor to Daniel Aronsen, Jr., Burlingame, Calif.

Filed Sept. 17, 1970, Ser. No. 72,959
Int. Cl. E04b 7/14
U.S. Cl. 52—83 13 Claims

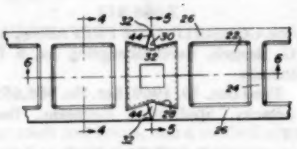


In a multistory building construction wherein building floors are dependingly supported from the top of a central and supporting tower, an improved suspension system for supporting the floors from the top of the tower is provided. The tower is constructed with paired horizontal beams having arcuate and opposite ends sloping from a vertical position overlying the sidewalls of the tower to a horizontal disposition along the top of the beam intermediate the beam ends. Supporting straps are fastened to and draped over the beams in layers to a depending position parallel to the building tower sidewalls. When connected to roof and floor supporting straps immediately below the beam ends, the layered supporting straps form a laminated supporting interconnection for compressively loading the tower which can be easily placed, be predictably loaded, and avoid the high shear stresses.

3,686,817
PRECAST WALL CONSTRUCTION

Richard W. Adams, P.O. Box 4, Loxahatghee, Fla.

Filed Dec. 15, 1969, Ser. No. 884,793
Int. Cl. E04c 1/10, 1/30
U.S. Cl. 52—586 8 Claims



Precast wall units having full height dovetail edge grooves which align with similar grooves on adjacent units to provide

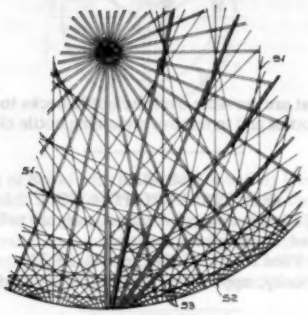
full height keyways. Sheet metal keys are wedged within the keyways and lock the adjacent units together, the joint being completed by the introduction of reinforcing rods and grout.

3,686,818

EXPANDIBLE REINFORCEMENT STRUCTURE FOR INFLATABLE DOMES

Dante Bini, Castelfranco, Emilia, Italy

Filed Nov. 20, 1969, Ser. No. 878,446
Claims priority, application Italy, Nov. 21, 1968, 1818 A/68
Int. Cl. E04c *5/01*; **E04b** *1/18*; **E04g** *11/04*
U.S. Cl. 52—646 **1 Claim**



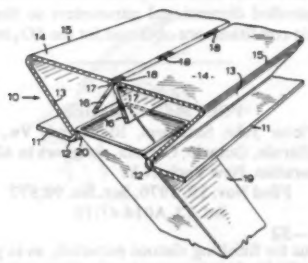
An expandable reinforcement for use in connection with a building method wherein a concrete structure is erected by inflation of an underlying air impervious membrane, the reinforcing structure being arranged in the form of a regular polygon and reinforcing elements radiate from each vertex of the polygon to each other vertex, there being a distribution of the end points of said reinforcing elements at any vertex. The reinforcing elements which elongate during inflation are constructed of two rods, one hooked at one end and the other at the other end, with the unhooked ends free, and the rods slidably disposed within a coil spring. A method of vibrating the inflated structure is also disclosed.

3,686,819

STRUCTURAL CHORD MEMBERS FOR JOIST CONSTRUCTION

Archibald H. Atkinson, 161 Terrence Park Dr., Ancaster, Ontario, Canada

Filed Jan. 14, 1970, Ser. No. 2,894
Int. Cl. E04c *3/293*
U.S. Cl. 52—693 **15 Claims**



A new structural chord member is provided from which joists can readily be formed of different sizes and capabilities. Each chord member has a cross section represented by two modified Z-section members disposed with their top flanges coplanar and their chord webs inclined toward one another, the junctions between the chord webs and the bottom flanges being spaced apart for insertion of joist web members to form the joist member. Each chord member is provided with compositing shear projections extending from its top flanges alternatively away from or toward the chord member interior.

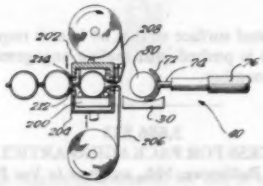
A particular joist construction comprises two spaced hollow chord members connected by a plurality of joist web members, the upper chord member being filled with high strength cementitious material to apply preloading tension to the lower chord member and increase the moment of inertia of the joist.

3,686,820

AUTOMATED HANDLING SYSTEM FOR ARTICLES

Richard D. Zenger, and Albert F. Lewis, both of Chicago, Ill., assignors to National Can Corporation, Chicago, Ill.

Filed April 16, 1970, Ser. No. 29,131
Int. Cl. B65b *9/02, 69/00*; **G07f** *11/66*
U.S. Cl. 53—3 **36 Claims**



A system for heating articles of disc-like or other nestable and geometric configurations which includes method and apparatus for arranging the articles into a plurality of spaced groups in nested relation to each other encasing the articles in a plastic film to produce a plurality of spaced stacks of interconnected articles, delivering the interconnected articles to a subsequent location, severing the plastic film to accommodate removal of each of the stacks of articles, and delivering each of the stacks of articles in end-to-end relationship for movement along a second path.

3,686,821

Patent Not Issued For This Number

3,686,822

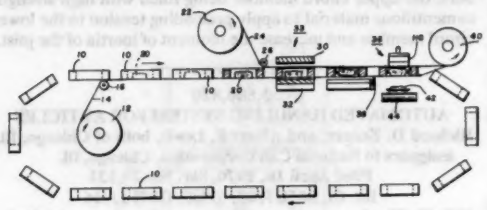
APPARATUS AND METHOD FOR SKIN PACKAGING

Robert O. Wolfelsperger, Fairfield, N.J., assignor to William E. Young, Stamford, Conn.

Continuation-in-part of Ser. No. 856,305, Sept. 9, 1969, abandoned. This application Sept. 14, 1970, Ser. No. 71,688
Int. Cl. B65b *31/02*
U.S. Cl. 53—22 A **14 Claims**

An apparatus and method is provided for forming a skin package particularly for food products, hardware and the like, in which said package is formed by a pressure differential applied to either an upper or lower member or both. This pressure is applied to the midportion of a film brought to a stretchable condition and held by its edges. When the film is thermoplastic this stretchable condition may be provided by holding its midportion against a heated platen until it is softened to a condition adapted for draping, sealing and forming. The product for packaging is placed on the lower covering member whose supporting face is adapted for sealing to the upper member by means of a pressure differential or air pressure and with this motion the film is stretched and brought to and is draped over the product. The air or atmosphere is used to form the package by pushing the film tightly around the product and into sealing condition with the other member. When both upper and lower members are thermoplastic film and are heated, either or both of the films after heating are urged toward each other. The chamber includes an upper and lower platen or clamping means and a mid-chamber form and

may have provision for flushing the product or package with gas such as nitrogen, carbon dioxide and the like. A stretchable film may be used as one or both of the members and have



an adhesive coated surface so that no heat is required but the stretchable film is pushed into sealing engagement with the other clamped member.

3,686,823

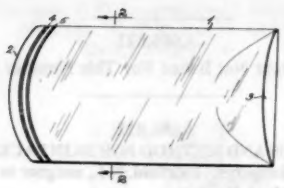
PROCESS FOR PACKAGING ARTICLES

Sol J. Perlman, Baltimore, Md., assignor to Vac Pac Manufacturing Company, Inc., Baltimore, Md.

Division of Ser. No. 842,570, July 17, 1969, Pat. No. 3,578,239, which is a continuation-in-part of Ser. No. 630,961, April 14, 1967, Pat. No. 3,478,952. This application April 9, 1970, Ser. No. 31,440

Int. Cl. B65b *31/00, 43/02*

U.S. Cl. 53—22 B **9 Claims**



An improved method of adhering the bottom of polyalkylene terephthalate film bags, such as those used to shrink package frozen turkeys, is disclosed. The bags are adhered on at least one side with two distinct adhesive bands. The inner band is a thermoplastic adhesive which allows a measure of "peelability and shock absorbability", whereas the outer adhesive band is a high strength thermo-setting adhesive. The contained product may even be cooked within the bag.

3,686,824

BOTTLE HANDLING APPARATUS

Wilhelm Rink, Littfeld, and Alfred Blecher, Eiserfeld, both of Germany, assignors to Wilhelm Rink, Littfeld, Germany

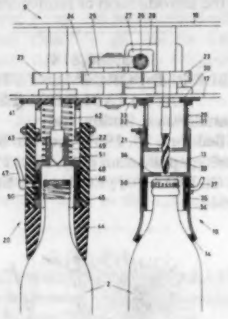
Filed Oct. 16, 1970, Ser. No. 81,463

Claims priority, application Germany, Oct. 20, 1969, P 16 07 972.4

Int. Cl. B65b *43/40;* **B67b** *7/12*

U.S. Cl. 53—381 A **19 Claims**

This invention has to do with bottle handling apparatus consisting of a conveyor on which bottles in cases are carried and



of sleeves that are movable over the bottle necks to count the number of bottles and to remove remaining bottle closures.

3,686,825

ELECTRO-PRECIPITATION

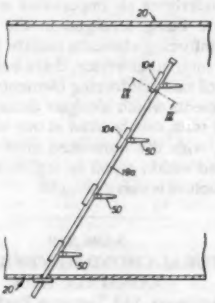
Howard G. T. Busby, Solihull, England, assignor to Lodge-Cottrell Limited, Birmingham, England

Filed May 18, 1970, Ser. No. 38,231

Claims priority, application Great Britain, April 8, 1970, 16568/70

Int. Cl. B03c *3/01*

U.S. Cl. 55—5 **11 Claims**



An injection assembly for injecting SO_3 conditioning agent into a duct carrying gas to be cleaned to an electro-precipitator comprises a manifold extending across the duct and a plurality of elongated nozzles extending from the manifold. Each nozzle and associated structure presents an aerofoil configuration of controlled dimensional parameters so that optimum aerodynamic conditions are obtained for the SO_3 injection.

3,686,826

POLYMER FINISHER

Leonard Victor John Saunders, Richmond, Va., and David Rochell, Sarnia, Ontario, Canada, assignors to Allied Chemical Corporation, New York, N.Y.

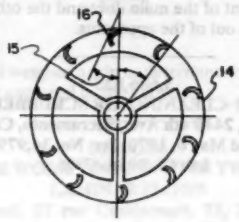
Filed Nov. 19, 1970, Ser. No. 90,977

Int. Cl. A01d *47/16*

U.S. Cl. 55—52 **7 Claims**

Apparatus for finishing viscous materials, as in polycondensation reactions for the production of polyamides and polyesters wherein a low viscosity liquid is fed into one end of a cylindrical vessel having one or more vapor outlets and at least one horizontally mounted agitator, mounted for rotation within said vessel, and having a drive shaft running throughout the full length of said vessel having spoked wheels interspaced and interconnected by circularly arranged serrated blades,

said wheels being spaced closer together at the feed end and being spaced at greater distances towards a discharge port located at the opposite end from the feed end of said vessel, said serrated blades being located in such a way as to keep a close clearance between the blade and wall and thus maintain a continuous shear gradient between blade and wall, and carry



an amount of liquid with them each time they leave the liquid surface which is poured from the blade near the apex of its travel and in this manner an unsupported corrugated film is formed parallel to the axis of the drive shaft yielding a large surface area which aids in rapid evaporation of volatile material thus expediting the polycondensation reaction.

3,686,827

REMOVAL OF ORGANIC VAPORS FROM GAS

Daniel H. Haigh, 4100 Lakeside Dr., Beaverton, Mich.; Richard H. Hall, 1187 E. Stewart Rd. Rt. 2, and Clarence E. Lange, 3112 Spruce, both of Midland, Mich., assignors to the Dow Chemical Company, Midland, Mich.

Filed Oct. 16, 1970, Ser. No. 81,563

Int. Cl. B01d *53/02*

U.S. Cl. 55—74 **14 Claims**

Alkylstyrene polymer particles are used as an absorbent for organic vapors and are particularly effective for removing organic vapors from air.

3,686,828

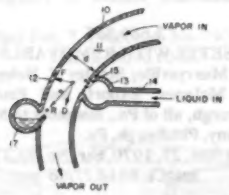
FRACTIONATION METHOD AND APPARATUS

Elisabeth M. Drake, 31 Gardner St., Allston, Mass., and William E. Gifford, 829 Ostrom Ave., Syracuse, N.Y.

Filed June 8, 1962, Ser. No. 201,051

Int. Cl. B01d *53/24*

U.S. Cl. 55—90 **6 Claims**



Fractionation method and apparatus in which an angular velocity is imparted to a vapor to form a rotating vapor stream and liquid droplets are introduced into the rotating stream to provide a centrifugal force to impel the droplets in a path through the stream, the path being of a length to attain vapor-liquid equilibrium. The liquid droplets are collected by impingement. High mass transfer and high flow rates are achieved.

3,686,829

DOUBLE WIRE DISCHARGE ELECTRODE ASSEMBLY

James F. Stocker, Kearny, Ariz., assignor to Kennecott Copper Corporation, New York, N.Y.

Filed Nov. 6, 1970, Ser. No. 87,401

Int. Cl. B03c *3/41*

U.S. Cl. 55—147 **10 Claims**

A discharge electrode assembly for use in an electrical gas precipitator has a pair of contiguous elongate wires extending between mounting means attached at one end thereof for suspending the electrode vertically within the precipitator and a pair of concentric cylindrical weights attached respectively to the other ends of the wires. Sufficient space is provided between the inner and the outer weights to permit precipitates to fall through to the bottom of the precipitator. Both weights preferably have enclosed, dome-shaped tops with respective lateral slots extending from one outer edge to the center of the tops. The slots accommodate enlarged extensions on the wire ends and permit the weights to be easily secured on the wires. The inner weight can be rotated within the outer weight to lock the wires within the slots so that accidental disconnection cannot take place during use. The wires are individually tensioned by the weights, and can continuously move longitudinally and rotationally with respect to each other to remove any adhering precipitates.

3,686,830

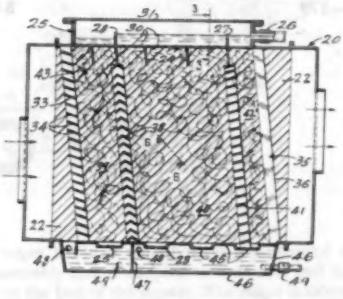
MULTIPLE COMPARTMENT CROSS FLOW ABSORBER

Richard L. Huntington, Rt. 1, Van Buren, Ohio

Continuation-in-part of Ser. No. 814,063, April 7, 1969, Pat. No. 3,576,317. This application Aug. 3, 1970, Ser. No. 60,562

Int. Cl. B01d *47/14*

U.S. Cl. 55—233 **10 Claims**



The invention is a multiple compartment horizontal cross flow packed bed absorber. A hollow shell has corrugated side

walls and a corrugated bottom wall. A partition separates the shell into a front compartment and a central compartment. Each of the compartments contains suitable tower packing. A horizontally slotted inlet grill and a vertically slotted outlet grill are provided. A liquid distributor distributes liquid downwardly through the front compartment and the central compartment.

3,686,831

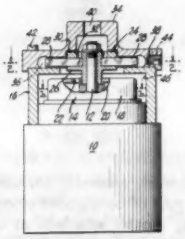
CENTRIFUGE TYPE SEPARATOR

Clarence R. Libby, Norwalk, Conn., assignor to Nash Engineering Company, South Norwalk, Conn.

Continuation of Ser. No. 678,659, Oct. 27, 1967, abandoned. This application Jan. 7, 1970, Ser. No. 3,575

Int. Cl. B01d *53/24*

U.S. Cl. 55—199 **6 Claims**



Apparatus requiring very small space is provided for separating the liquid and gas components of a fluid mixture. A rotating element, coupled to and downstream of a gas handling pump separates the gas from the liquid that is discharged by the pump. Apertures are provided in the rotating member to cause the separation and flow of the liquid in a direction opposite to the flow of the gas. Means are provided to control the discharge of the liquid by the use of a pressure actuated control valve in combination with the separator.

3,686,832

APPARATUS FOR ELIMINATING DILUTED SULPHUR OXIDES FROM COMBUSTION EXHAUST GASES

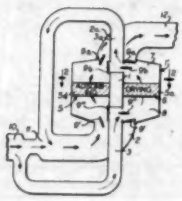
Shin Hori, Tokyo; Tomiyoshi Inoue, Kanagawa-ken; Shozo Yamamoto, Tokyo; Kazuo Tatara, Chiba-ken; Masahiro Kitagawa, Kanagawa-ken; Masaru Watanabe, Tokyo; Yukihiko Okada, Tokyo, and Naoki Negishi, Tokyo, all of Japan, assignors to Kogyo Kaihatsu Kenkyusho, Tokyo, Japan

Continuation-in-part of Ser. No. 550,374, May 16, 1966, abandoned. This application Oct. 27, 1969, Ser. No. 869,787

Claims priority, application Japan, May 18, 1965, 40/28786

Int. Cl. B01d *53/00*

U.S. Cl. 55—179 **8 Claims**



An apparatus for eliminating sulphur oxides from combustions exhaust gases comprising a plurality of compartments each containing activated carbon and means for washing the latter with water. A pair of inlet ducts, a pair of outlet ducts, and inlet and outlet flow control means associated with each compartment are provided so that the latter can be placed in communication with either of the inlet ducts and either of the outlet ducts, respectively, or isolated from all of the ducts, the inlet ducts branching from a common main duct for leading exhaust gas to the apparatus. One of the outlet ducts communicates with one of the inlet ducts at a position downstream of the branching point of the main duct and the other of the outlet ducts leads gas out of the apparatus.

3,686,833

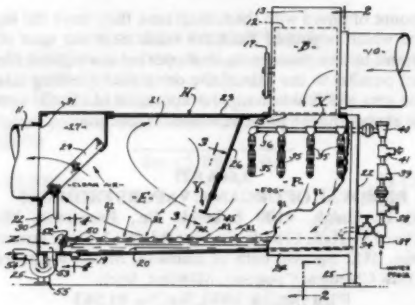
SELF-CLEANING AIR SCRUBBER

Richard W. Rush, 2440 4th Ave., Sacramento, Calif.

Filed May 6, 1970, Ser. No. 34,979

Int. Cl. B01d *47/06*

U.S. Cl. 55—228 **18 Claims**



An air conditioning scrubber for filtering contamination and foreign particles out of a moving air column by means of hydrolyzation and precipitation a pressurized cold water vapor permeated atmosphere and from which said contamination and particles are accumulated as debris or flotsam that is continuously driven by the moving air column and induced wave motion to a collector and discharged.

3,686,834

Patent Not Issued For This Number

3,686,835

FILTER CASSETTE WITH REMOVABLE CAPSULE

John P. Strange, Murrysville; Stanley P. Nebash, Pittsburgh; Alexander C. McInnes, Export, and Paul W. McConnaughey, Pittsburgh, all of Pa., assignors to Mine Safety Appliances Company, Pittsburgh, Pa.

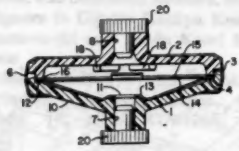
Filed Nov. 27, 1970, Ser. No. 93,275

Int. Cl. B01d *27/08*

U.S. Cl. 55—270 **11 Claims**

A shallow cup of non-hygroscopic material has a central inlet opening in its base and a filter disc closing its open end, whereby a hollow capsule is formed. A separable two-part cassette contains the capsule, with the marginal area thereof clamped between the two parts. One part contains the cup and has an end wall provided with a central inlet port registering with the cup inlet, and the other part of the cassette covers the filter and has an end wall provided with a central outlet port. The filter forms one wall of a chamber between it and the end wall of the last-mentioned part of the cassette. After a period

of filtering, the cassette is opened and the preweighed capsule



is removed and weighed again to determine the amount of particulate matter captured by the capsule.

3,686,836

DUST-FREE WORK STATION WITH TWO CROSSED LAMINAR FLOWS

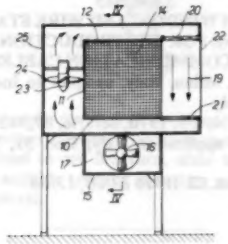
Pierre Rabilloud, 37 rue Caulincourt, 75, Paris, and Jean-Claude Guichard, Residence La Cordillasse, Batiment A-3, 91, Mennecy, both of France

Filed June 22, 1970, Ser. No. 48,172

Claims priority, application France, June 23, 1969, 6921026

Int. Cl. B01d *19/00*

U.S. Cl. 55—467 **8 Claims**



A dust-free work station according to the invention comprises a working space limited inter alia by a subetantially horizontal lower surface and apertured side walls, and provided with a passage in front. Means are provided for establishing two laminar flows of air, i.e., horizontally between side walls and vertically through said passage.

3,686,837

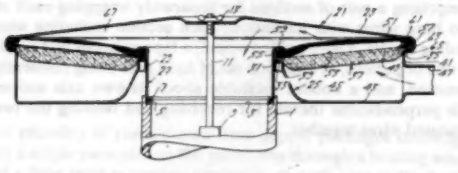
DUAL MEDIA AIR FILTER

John D. Hopkins, Franksville; James C. McLaren, Racine; Ronald A. Johnson, Racine, and Robert J. Offer, Racine, all of Wis., assignors to Walker Manufacturing Company, Racine, Wis.

Filed Feb. 7, 1969, Ser. No. 797,466

Int. Cl. B01d *25/00*

U.S. Cl. 55—487 **7 Claims**



An air filter construction that provides a high capacity and high efficiency and is suitable for use with high performance automobile internal combustion engines includes a dual filter media in which a semi-rigid fibrous depth filter element is located on the upstream side and the downstream face of the element bears against pleats formed in a pleated paper material. The outer edges of the pleated paper are compressed and joined to the depth element in an air tight compression seal that may be mounted on suitable ledges inside of a suitable air filter housing.

3,686,838

CONTROL ARRANGEMENT FOR HYDRAULIC SYSTEMS

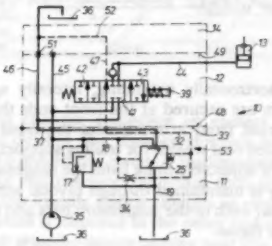
Claude Comeau, Bagnolet, France, and Karl-Heinz Digel, Reutlingen-Ohmenhausen, Germany, assignors to Robert Bosch G.m.b.H., Stuttgart, Germany

Filed July 6, 1971, Ser. No. 159,623

Claims priority, application Germany, July 7, 1970, P 20 33 485.4

Int. Cl. A01d *67/00*

U.S. Cl. 56—10.2 **4 Claims**



The return flow passage from the load is connected to a switchover valve, the position of which is controlled by a control flow that is present while the pump is operating. Should the pump be shut off when the control is unintentionally set to lower the load, lowering is prevented by a shut-off member in the switchover valve that is biased to close the return flow passage when the control flow is not present.

3,686,839

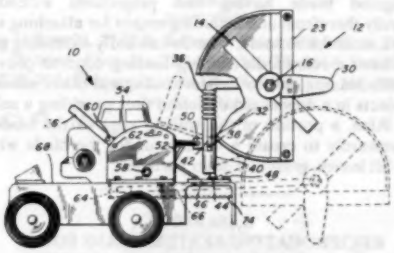
COMBINATION OF A RAPIDLY REMOVABLE LAWN EDGER AND A ROTARY LAWNMOWER

Lucian T. Lambert, 6004 E. 18th, Tulsa, Okla.

Filed June 11, 1971, Ser. No. 152,099

Int. Cl. A01d *35/26, 53/14*

U.S. Cl. 56—11.6 **6 Claims**

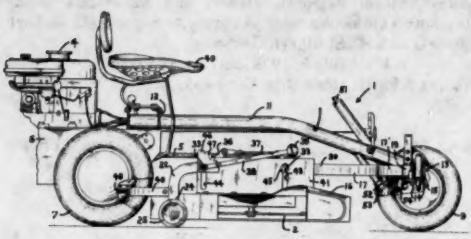


The edger blade is mounted on a horizontal shaft in an edger assembly that is adapted to slide into and be held by a fixture on the bed of the mower. The edger is driven by a belt from the vertical shaft of the mower. Spring means urges the edger assembly outwardly to maintain belt tension, while the belt holds the assembly in the fixture.

3,686,840
RIDING LAWN MOWER

George R. Root, Baxter Springs, Kans., assignor to Root Manufacturing Company, Inc., Baxter Springs, Kans.

Filed July 28, 1970, Ser. No. 58,863
Int. Cl. A01d *35/26*
U.S. Cl. 56—15.8 7 Claims

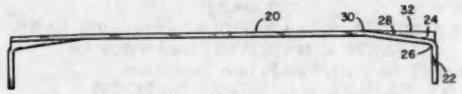


A pair of horizontally extending, laterally spaced apart suspension bars are secured at the front ends thereof to the pivotally mounted front axle adjacent the front wheels and have independent rear wheels for trailing support. The mower blade housing is adjustably hung from the suspension bars and lateral stability is maintained through pivotal arms extending between the rear ends of the suspension bars and the center of the mower rear frame.

3,686,841
ROTARY THATCHER

Donald V. Mager, Minneapolis, Minn., and Frederick R. Mager, Minneapolis, Minn., assignors to Mechanize Incorporated, Minneapolis, Minn.

Continuation of Ser. No. 737,706, June 17, 1968, abandoned.
This application Oct. 30, 1970, Ser. No. 85,725
Int. Cl. A01d *51/00*
U.S. Cl. 56—17.5 3 Claims



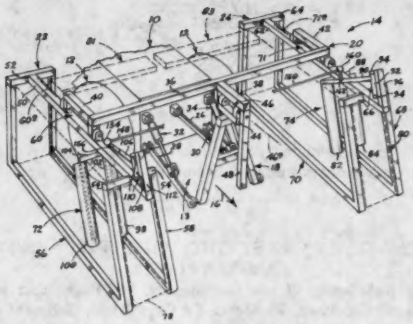
A rotary thatcher comprising a horizontally disposed unitary elongated blade having end projections extending downwardly therefrom and including means for attaching said blade to a shaft for rotation. The downwardly extending projections have a rearwardly sloping leading edge to provide better self-cleaning and to deflect rocks, and other encountered objects in a downward direction thus providing a safety feature. Also, a portion of the trailing edge of the blade is sloped upwardly to create a vacuum under the blade which tends to lift leaves, grass and other particles.

3,686,842
RECIPROCATING BEATER MEANS FOR AGRICULTURAL ROW CROP HARVESTER

Eugene G. Littau, 942 Fir S., Salem, Oreg.

Filed Jan. 14, 1971, Ser. No. 106,427
Int. Cl. A01g *19/00*
U.S. Cl. 56—330 10 Claims

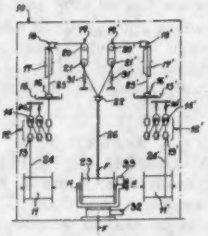
An agricultural row crop harvester including a pair of spaced-apart, substantially parallel elongated cylindrical beater elements which are inclined relative to the horizontal and which are adapted to straddle plants in a row during a harvesting operation. Such elements are reciprocated as a unit under power to strike alternately opposite sides of stems in a plant, to dislodge produce from the plant by a sort of whiplash action produced in such stems.



3,686,843
INSULATION WINDING AND WIRE STANDING MACHINE FOR THE PRODUCTION OF TELECOMMUNICATION CABLES

Giovanni Alimenti, Milan, Italy, assignor to Industrie Piretti S.p.A., Milan, Italy

Filed Nov. 9, 1970, Ser. No. 87,941
Claims priority, application Italy, Dec. 31, 1969, 26517-A/69
Int. Cl. H01b *13/00, 13/08*
U.S. Cl. 57—12 6 Claims



A combined insulation winding and wire stranding machine comprising a pair of sections for separately wrapping each of two bare wires with insulation, each section including wire feeding spools, a wire pulling wheel, a tape wrapper and a pair of sets of pulleys, at least one set of each pair being resiliently mounted, and a bobbin rotatable about its own axis and an axis perpendicular thereto for receiving and twisting the two insulated wires together.

3,686,844
Patent Not Issued For This Number

3,686,845

APPARATUS FOR PRODUCING A NON-IRREGULAR TWIST YARN

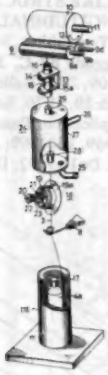
Sadayuki Okada, and Seinosuke Nomura, both of Inazawa-shi, Japan, assignors to Gijutsu Kenkyu Kumiai Amaike Kenkyusko, Inazawa-shi and Daido Keori Kabushiki Kaisha, Tokyo, Japan

Filed Sept. 12, 1967, Ser. No. 667,144

Claims priority, application Japan, Sept. 16, 1966, 41/61297; Sept. 16, 1966, 41/61298; Sept. 16, 1966, 41/61296

Int. Cl. D01h *13/30*

U.S. Cl. 57—34 HS 6 Claims



An apparatus and process for providing twisted yarn with a uniform distribution of twists along the length of the yarn. The process is utilized to set the yarn, after the yarn has been twisted, with a suitable treating or setting medium such as hot water, chemicals etc.

3,686,846

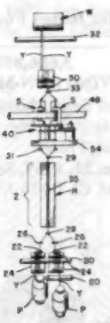
METHOD AND APPARATUS FOR TREATING THERMOPLASTIC YARNS

Joseph F. Smith, 1407 Hobbs Rd., Greensboro, N.C.

Filed Aug. 6, 1970, Ser. No. 61,537

Int. Cl. D02g *1/02*; D01h *7/92*, *13/28*

U.S. Cl. 57—34 HS 6 Claims



A plurality of yarns drawn from supply packages converge into a single yarn path as the yarns pass through a heating zone and a false twist is applied separately to each yarn in the heating zone. Upon exiting from the heating zone the yarns diverge to separate spindles mounted on a common unit displaceable into and out of engagement with a drive means for providing S and/or Z twist to alternate yarns.

3,686,847

APPARATUSES FOR REMOVING AND REPLACING BOBBINS IN A SPINDLE TYPE SPINNING MACHINE, AND A METHOD OF USING SUCH APPARATUSES

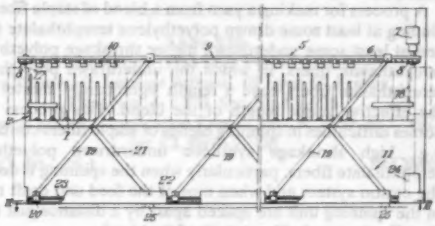
Louis Vignon, Geneva, Switzerland, assignor to Hispano Suiza (Suisse) S.A., Geneva, Switzerland

Filed Dec. 3, 1969, Ser. No. 881,833

Claims priority, application Luxembourg, Dec. 12, 1968, 57530

Int. Cl. D01h *9/04*

U.S. Cl. 57—52 23 Claims



The bobbin changer comprises an endless belt provided with gripping devices, the number of which being twice the number of spindles to be served. A loading station is disposed at one end of the machine such that each gripping device passing near this loading station engages an empty bobbin. An unloading station is disposed at the other end of the machine such that each gripping device passing near this unloading station disengages a full bobbin. A first operation consists in loading the outer run of the endless belt, and a second operation consists in unloading the inner run of the endless belt during the empty bobbins pass from the outer run to the inner run.

3,686,848

HIGHLY RESILIENT POLYPROPYLENE YARN

Robert Miller, Wayne, N.J.; Robert J. Clarkson, Winnsboro, and Frank C. Cesare, Columbia, both of S.C., assignors to Uniroyal, Inc., New York, N.Y.

Filed April 23, 1970, Ser. No. 31,362

Int. Cl. D02g *1/16*, *3/00*

U.S. Cl. 57—140 R 5 Claims

Textured Polypropylene yarn possessing high resilience comparable to nylon as a result of unique structural configuration. The yarns are particularly suited for use in carpeting and upholstery.

3,686,849

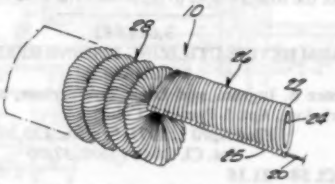
HAT TRIM

Allen D. Everitt, 2729 E. Belleview Place, Milwaukee, Wis.

Division of Ser. No. 787,690, Dec. 30, 1968, Pat. No. 3,520,261. This application Dec. 8, 1969, Ser. No. 883,089

Int. Cl. D02g *3/36*

U.S. Cl. 57—152 2 Claims



Decorative yarn is stitched with an elastic pillar in a strip having purls or loops projecting essentially from one side of

the pillar only. The strip has a uniform helical twist such that the purls or loops appear to project radially from the longitudinal axis of the strip.

3,686,850

STAPLE FIBERS FOR BLENDS

Jack Thomson, Harrogate, England, assignor to Imperial Chemical Industries, Limited, London, England

Filed Dec. 15, 1970, Ser. No. 98,456

Claims priority, application Great Britain, Dec. 19, 1969, 62,009/69

Int. Cl. D02g 3/24

U.S. Cl. 57—157 R **6 Claims**

A process for making a yarn from a blend of staple fibers including at least some drawn polyethylene terephthalate fibers and at least some underdrawn higher shrinkage polyethylene terephthalate fibers, in which the underdrawn polyethylene terephthalate fibers have a length significantly shorter than the effective staple length of the blend. This process overcomes difficulties in spinning blends of staple fibers containing e.g., high shrinkage synthetic underdrawn polyethylene terephthalate fibers, particularly when the spinning is done on the cotton system and when nips of the feed and draft rollers in the spinning unit are spaced apart by a distance just above the effective staple fiber length of the blend.

3,686,851

TALKING CLOCK APPARATUS

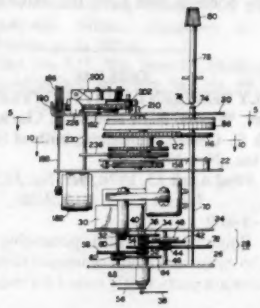
Isao Kozu, and Yasutaka Nakashima, both of Osaka, Japan, assignors to Matsushita Electric Industrial Co., Ltd., Kadoma, Osaka, Japan

Filed March 4, 1970, Ser. No. 16,319

Claims priority, application Japan, March 10, 1969, 44/19686; July 16, 1969, 44/57803

Int. Cl. G04c 21/14

U.S. Cl. 58—14 **3 Claims**



An apparatus for vocally indicating the time of day, which includes a plurality of magnetic discs having a plurality of sound tracks for storing time voice signals corresponding to various points of time, a clock mechanism which rotates in accordance with the lapse of time, a stepping device for rotating the discs upon rotation of the clock mechanism, a magnetic head for reproducing the time voice signals stored on the discs, and a driving mechanism for moving the head substantially parallel with a plane of the discs so that the head scans each of the sound tracks to reproduce the time voice signal.

3,686,852

ALARM DEVICE UTILIZING FISHING REEL RATCHET MECHANISM

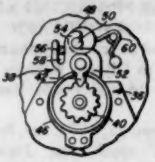
Clarence E. Ingram, and Louis T. Warriner, both of 777 N. Park Ave., Apt. 3, Pomona, Calif.

Filed April 1, 1971, Ser. No. 130,393

Int. Cl. G04b 11/00, 37/00

U.S. Cl. 58—21.15 **4 Claims**

An alarm clock device is provided which produces an alarm signal similar to that of a fishing reel when a fish takes the hook and unwinds the line from the reel. The clock is comprised of a conventional clock mechanism mated with an alarm mechanism which includes a fishing reel clicking ratchet mechanism to produce a clicking like sound when the alarm goes off.



3,686,853

APPARATUS FOR THE ROLLING OR TWISTING OF YARN OR RIBBON-LIKE STRUCTURES ABOUT THEIR LONGITUDINAL AXIS

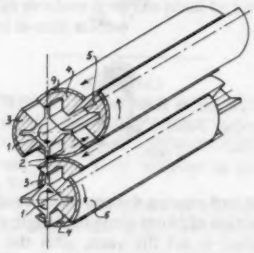
Ole-Bendt Rasmussen, Topstykket, 3460 Birkerod; Willy Buch Madsen, Valby Langgade 88 C, 2500 Valby, and Arne E. Nielsen, Baltorpvej 109, 2750 Ballerup, all of Denmark

Filed March 20, 1970, Ser. No. 21,341

Claims priority, application Denmark, March 20, 1969, 1540/69; March 20, 1969, 1541/69; Aug. 11, 1969, 4304/69

Int. Cl. Do1h 7/92; D02g 1/08

U.S. Cl. 57—77.42 **9 Claims**



Textile structures, such as yarns or ribbons, are twisted or rolled by moving the rubbing surfaces of two rubbing rollers relative to one another transversely of the longitudinal direction of the structure passing therebetween, at least one of said rubbing rollers comprising a plurality of peripheral segments or sections which are successively engaged with the other rubbing roller and while so engaged are moved axially, i.e., transversely, of the feeding direction of the structure and are returned to their initial positions during the periods of non-engagement with the other rubbing roller.

3,686,854

Patent Not Issued For This Number

3,686,855

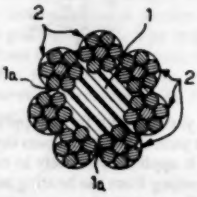
CABLES HAVING NON-METALLIC CORES

Bernard C. Falcy, and Rene Mazuir, both of 1 Bourg, France, assignors to Societe Anonyme Des Hauts Fourneaux De Chiers, Longury-Bas, France

Filed Dec. 29, 1969, Ser. No. 888,739

Int. Cl. D07b 1/00, 1/06

U.S. Cl. 57—145 **5 Claims**



A cable is provided with a solid core made of a relatively incompressible thermoplastic material.

ERRATA

For Classes 58—14, 58—21, 58—38, 58—39, 58—76, 58—90, 58—127, 58—85 see:
Patents Nos. 3,686,851 and 3,686,852, and 3,686,878 through 3,686,885, inclusive

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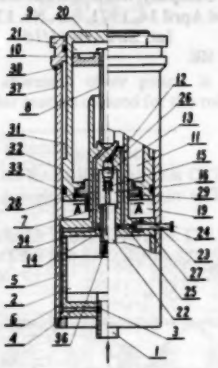
3,686,856
HYDRAULIC SERVOMOTOR WITH AIR MOTOR

Witold Rozwadowski, and Aleksander Szymanski, both of Warsaw, Poland, assignors to Glornne Biuro Studiowi Projektow Zaplecza Technieznego Warszawa, Giviazdzista, Poland

Filed Nov. 17, 1970, Ser. No. 90,341
Claims priority, application Poland, Nov. 21, 1969, 137030
Int. Cl. F01b *21/00*
U.S. Cl. 60—6 10 Claims



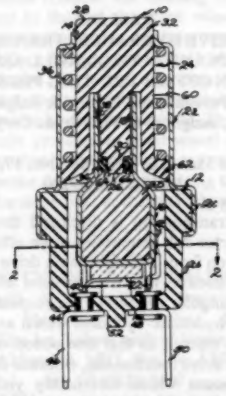
The hydraulic servomotor with air motor is a device which integrates functions performed to date by the big set consisting of hydraulic compound machine, hydraulic conduits, control unit and appropriate servomotor.

The servomotor is constructed as an integral unit and consists of the piston air motor of one-sided action and of relatively high frequency running, hydraulic storing system under pressure and appropriate servomotor. By means of these servomotors operating forces of the order of a few to a dozen or so tons could be obtained.

3,686,857
THERMAL ACTUATOR

Peter G. Berg, Norton, Mass., assignor to Texas Instruments Incorporated, Dallas, Tex.

Filed Aug. 3, 1971, Ser. No. 168,657
Int. Cl. F03g *7/06*; G05d *15/01*
U.S. Cl. 60—23 21 Claims

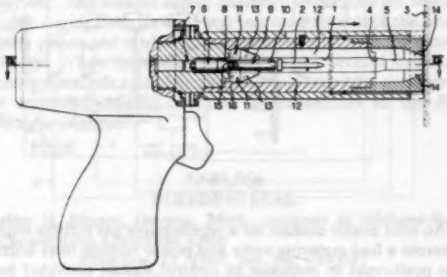


A thermal actuator including a casing having an opening at one end and a chamber substantially filled with a thermally expandable medium supported within the casing. The chamber includes a neck portion defining an open-ended bore in axial registry with the opening in the casing. A piston assembly including a piston head is received within the bore and has a piston rod projecting from the bore toward the opening in the casing. A self-regulating heat generating element is disposed in thermal communication with the thermally expandable medium and generates heat at a substantially constant temperature sufficient to effect a predetermined expansion of the medium in response to electrical energization of the heating element so as to cause the medium to apply sufficient force against the piston head to effect movement thereof from a first rest position to a second actuated position.

3,686,858
CARTRIDGE ACTUATED TWO PART RAM

Pierre Ternet, 16 Impasse Belloeuf, 69 Lyon 6°, France

Filed Nov. 4, 1970, Ser. No. 86,696
Claims priority, application France, Nov. 5, 1969, 6937982
Int. Cl. F01b *29/08*
U.S. Cl. 60—26.1 19 Claims

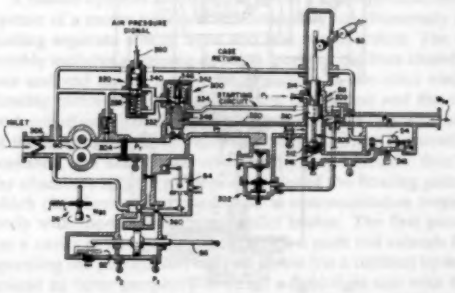


Apparatus of the type in which explosion of a cartridge serves to drive a pin into a hard material is provided with a piston ram for driving the pin. The piston ram is made in at least two distinct parts, and each of the ram parts is provided with a stop surface which engages a corresponding stop surface of the apparatus so as to ensure successive stopping of the distinct parts of the piston ram upon firing of the apparatus.

3,686,859
TURBINE ENGINE STARTING CIRCUIT

Albert H. White, Wethersfield, Conn., assignor to Chandler Evans, Inc., West Hartford, Conn.

Division of Ser. No. 825,857, May 19, 1969, Pat. No. 3,606,754. This application Sept. 25, 1970, Ser. No. 75,370
Int. Cl. F02c *9/08*, *9/10*
U.S. Cl. 60—39.14 R 9 Claims



A starting circuit for a regenerative gas turbine engine wherein a fuel metering valve and power turbine inlet nozzles

are positioned in response to control signals provided by a closed loop system. Engine operating parameters, including gas generator turbine inlet temperature, are sensed and electrical signals commensurate therewith are delivered as inputs to the logic circuitry where, in combination with selected operational mode inputs provided by the operator, they are operated upon to provide control signals for the power turbine nozzle actuators and the gas generator fuel control metering valve.

3,686,860

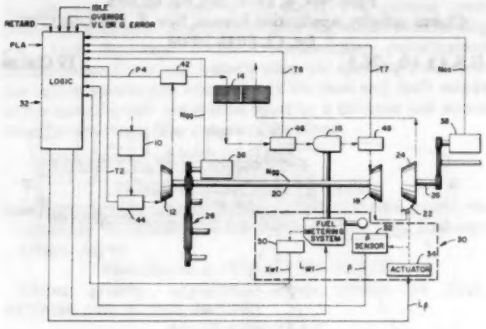
NOZZLE CONTROL

Albert H. White, Wethersfield, Conn., assignor to Chandler Evans Inc., West Hartford, Conn.

Division of Ser. No. 825,857, May 19, 1969, Pat. No. 3,606,754. This application Sept. 25, 1970, Ser. No. 75,401

Int. Cl. F02c 9/02

U.S. Cl. 60—39.25 **16 Claims**



An inlet nozzle control for a regenerative gas turbine engine wherein a fuel metering valve and power turbine inlet nozzles are positioned in response to control signals provided by a closed loop system. Engine operating parameters, including gas generator turbine inlet temperature, are sensed and electrical signals commensurate therewith are delivered as inputs to logic circuitry where, in combination with selected operational mode inputs provided by the operator, they are operated upon to provide control signals for the power turbine nozzle actuators.

3,686,861

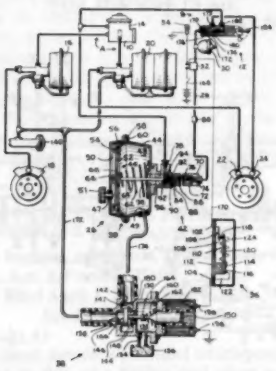
ELECTRICAL CONTROL FOR VACUUM PUMP

Maxwell L. Cripe, South Bend, Ind., assignor to The Bendix Corporation

Filed March 19, 1971, Ser. No. 125,978

Int. Cl. F15b 1/02

U.S. Cl. 60—51 **10 Claims**



An electrical control for operating a vacuum powered pumping device which supplies fluid under pressure to operate a spring braking device. A pressure operating signal is communicated to the electrical control and an indicator to inform the operator of the operational pressure mode in the supply system. If a low pressure mode signal is generated, a temperature responsive switch sequentially interrupts the electrical energy flow to the electrical control. By interrupting the electrical energy flow to the electrical control, the pumping device will reciprocate and increase the pressure in the system causing the pressure mode signal to change. With a change in the pressure mode signal indicating a higher pressure, the electrical energy flow to the control will be terminated.

3,686,862

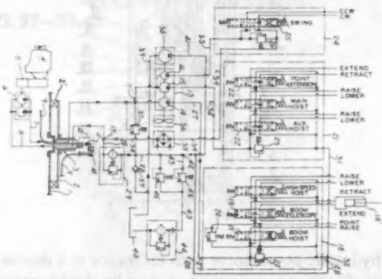
HYDRAULIC SYSTEM FOR SINGLE ENGINE TRUCK CRANE OR THE LIKE

Lyle D. Grider, New Berlin; John T. Hornagold, Waukesha, and Ram N. Rathi, South Milwaukee, all of Wis., assignors to Bucyrus-Erie Company, South Milwaukee, Wis.

Filed April 14, 1971, Ser. No. 133,799

Int. Cl. F15b 11/16

U.S. Cl. 60—52 HE **9 Claims**



A hydraulic system for a single engine truck crane includes a pump input section in the carrier that is driven by the carrier engine and an output section in the upper works. A closed loop connects the input and output sections and requires only two passages through the swivel joint. The working reservoir is in the upper works, and a supercharge pump in the upper works is driven by the output section and draws from the reservoir to feed the loop. In one embodiment the output section comprises a flow divider leading to valve units and working motors which are incorporated in the closed loop, and in another embodiment the output section includes a power motor which is driven by the pump in the carrier and which drives working pumps in the upper works that serve the working motors.

3,686,863

VARIABLE-DRIVE HYDRAULIC TRANSMISSION FOR THE FOUNTAIN AND DUCTOR ROLL ASSEMBLIES OF AN OFFSET PRINTING PRESS

Delphus Eugene Perrault, and Frederick Ralph Schopp, both of Seattle, Wash., assignors to Web Press Corporation, Seattle, Wash.

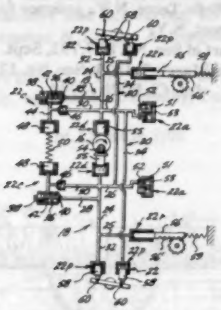
Filed March 6, 1970, Ser. No. 17,258

Int. Cl. F15b 7/00

U.S. Cl. 60—54.5 R **4 Claims**

A hydraulic transmission is disclosed through which the fountain and ductor roll assemblies of an offset printing press are variably driven from a reciprocable drive mechanism having a constant stroke. The transmission allows for infinite variation in the angular motion of the respective rolls, and includes a pair of hydraulic cylinders which are connected in a closed hydraulic circuit, so that one piston of the cylinders is displaced by the drive mechanism, whereas the other piston is displaced by means which alternately yield to the counterstroke of the aforesaid other piston during the displacement

of the one piston. By adjusting the volumetric capacity of the circuit, within a selected maximum pressure, the counterstroke of the aforesaid other piston is varied until it produces the angular motion desired for the rolls.

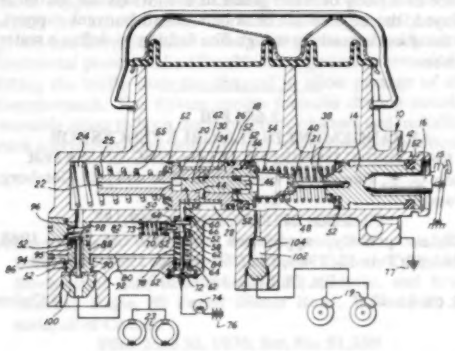


3,686,864

MULTIPLE FEATURE MASTER CYLINDER

Paul B. Shutt, St. Joseph, Mich., assignor to The Bendix Corporation

Filed March 2, 1971, Ser. No. 120,145
Int. Cl. F15b 7/00; H01b 35/38
U.S. Cl. 60—54.5 E 14 Claims



A brake failure warning switch, a brake proportioning valve with bypass and a metering valve are provided in a single master cylinder housing. During normal brake application, the proportioning valve reduces the braking effort of the rear wheels compared to that of the front wheels. The warning device and proportioning valve are interconnected in such a manner that a failure in the front brake hydraulic system not only actuates a brake failure indicator but also holds the proportioning valve open to permit the remaining rear system to deliver its maximum braking capability. The metering valve holds off hydraulic pressure to front wheel disc brakes until sufficient pressure has built up in the rear system to engage the shoes with the brake drum, thus energizing the disc brakes at approximately the same time as the rear wheel drum brakes.

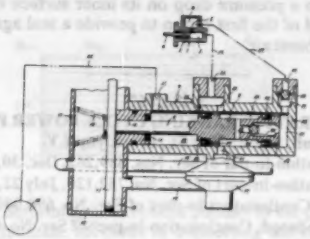
3,686,865

INTENSIFYING CYLINDER OF A BRAKE APPARATUS

Toyoju Mochizuki, 5-10, 7-chome, Roppongi, Minato-ku, Tokyo, and Mamoru Watanabe, 16-9, 6-chome, Takinogawa, Kita-ku, Tokyo, both of Japan

Filed March 4, 1971, Ser. No. 120,841
Int. Cl. F15b 7/00
U.S. Cl. 60—54.5 HA 10 Claims

An intensifying chamber is formed in an intensifying cylinder in front of an intensifying piston mechanically driven by a servo motor, and a first hydraulic chamber is formed at the rear of the intensifying piston and is connected to a reservoir of a master brake cylinder. A second hydraulic chamber is formed in said intensifying piston. During forward stroke of the intensifying piston, the volume of the intensifying chamber decreases and transmits hydraulic pressure to a wheel brake while increase in volume change takes place in the first hydraulic chamber to cause inflow of working liquid from the reservoir. The second liquid chamber undergoes no volume change during both forward and rearward strokes of the intensifying piston and is always in communication with the master cylinder. When hydraulic pressure in the second hydraulic chamber reaches a predetermined level, hydraulic pressure in the second hydraulic chamber is transmitted to the first hydraulic chamber.

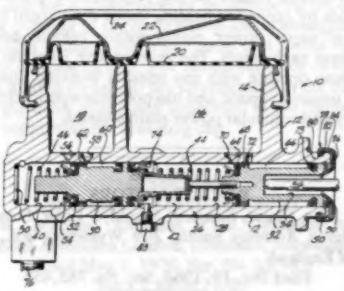


3,686,866

BLEEDING SEAL

Walter H. Blount, Owosso, Mich., assignor to Midland-Ross Corporation, Cleveland, Ohio

Filed Dec. 11, 1967, Ser. No. 689,607
Int. Cl. F15b 7/00
U.S. Cl. 60—54.6 R 11 Claims



A master cylinder assembly for use in a split hydraulic brake system of a motor vehicle for substantially simultaneously actuating separate sets of front and rear wheel brakes. The assembly includes a housing defining a cylindrical bore closed at one end and having a first piston slidable in the other end, a floating piston disposed between the first piston and the one end, coiled compression springs disposed on the opposite sides of the floating piston for returning both pistons to inoperative positions, and a fluid reservoir for supplying hydraulic fluid to the chambers located on opposite sides of the floating piston, which chambers are adapted to be in communication respectively with the front and rear sets of brakes. The first piston has a cavity in its outer end into which a push rod extends for operating the pistons, and the first piston has a resilient lip seal around its outer periphery to effect a fluid-tight seal with the bore when the piston is moved to an operative position by operation of the push rod. A bleeding seal is mounted in the housing and has a lip portion overlying the outer end of the first piston when the latter is in its inoperative position so that

during conventional bleeding operations of the master cylinder, if said resilient lip seal should collapse allowing inflow of ambient air, the lip portion of the bleeding seal will be responsive to a pressure drop on its inner surface to seat on the outer end of the first piston to provide a seal against such inflow of ambient air.

3,686,867

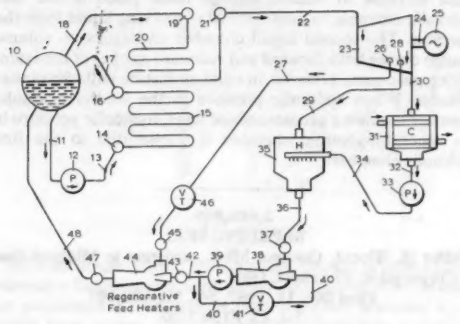
REGENERATIVE RANKING CYCLE POWER PLANT

Francis R. Hull, 567 E. 26th St., Brooklyn, N.Y.

Continuation-in-par of Ser. Nos. 889,262, Dec. 30, 1969, Continuation-in-part of Ser. No. 752,120, July 22, 1968, abandoned, Continuation-in-part of Ser. No. 690,040, Nov. 14, 1967, abandoned, Continuation-in-part of Ser. No. 621,381, Jan. 23, 1967, abandoned, Continuation-in-part of Ser. No. 403,244, Oct. 12, 1964, abandoned. This application March 8, 1971, Ser. No. 121,795

Int. Cl. F01k 7/16, 7/32, 3/14

U.S. Cl. 60—94 **16 Claims**



This invention relates to the regenerative pre-heating of feed liquids by expanded heating vapor discharged from heat engines of vapor power plants within velocity-accelerated contact heat exchangers. The regenerative Rankine cycle invention may operate with any suitable working fluid such as steam or organic vapors, and has potential application to both stationary and vehicular power plant systems.

3,686,868

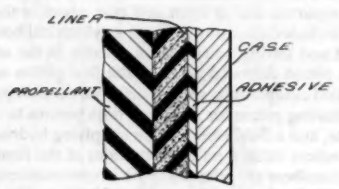
ROCKET MOTORS

Michael John Chase, Sunglen, Stanklyn Lane, Summerfield, and Derek Anthony Smith, 209 Wymering Rd., London, both of England

Filed Dec. 19, 1968, Ser. No. 785,458

Int. Cl. F02k 9/04

U.S. Cl. 60—200 A **7 Claims**



An elastomer-containing compound suitable for use in the lining of rocket motor cases comprising 100 parts by weight elastomer and, inter alia, 20–80 parts by weight of at least one metal halide having a boiling point above 500° C and developing a significant vapor pressure between 500 and 1,200° C. The metal halide is typically lead chloride.

3,686,869

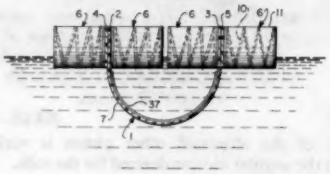
BUOYANT BARRIER AND METHOD FOR INSTALLING THE SAME

James E. Manuel, Belle Terre, N.Y., assignor to Versatech Corporation, Nesconset, N.Y.

Continuation-in-part of Ser. No. 857,792, Sept. 15, 1969. This application March 5, 1971, Ser. No. 121,275

Int. Cl. E02b 15/04

U.S. Cl. 61—1 F **5 Claims**



A buoyant barrier, for confining oil spills and the like, comprises an elongated sheet of flexible material and a plurality of resiliently collapsible air chambers secured to the sheet and arranged in two series each extending along a different side edge portion thereof, the arrangement being such that the barrier can be flattened and wound on a reel, for storage and transport, and unwound from the reel and deployed on the surface of a body of water when in use. When the barrier is deployed, the inflated air chambers afford buoyant support, and the sheet extends in trough-like fashion to define a water chamber.

3,686,870

ARRANGEMENT IN FLEXIBLE FENCES FOR ENCLOSING IMPURITIES FLOATING ON WATER

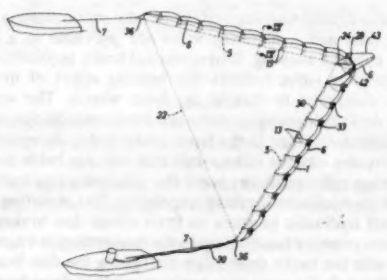
Erling G. E. Blomberg, Vastergatan 3 A 411, 23 Goteborg, Sweden

Filed Oct. 24, 1969, Ser. No. 869,153

Claims priority, application Sweden, Oct. 24, 1968, 14366/68; Feb. 12, 1969, 1893/69; July 4, 1969, 9557/69

Int. Cl. E02b 15/04, 3/04

U.S. Cl. 61—1 F **10 Claims**



A slick confining boom having an elongated flexible body means with upwardly extending portion to which floats are attached supporting said portion above the surface of a body of water and a downwardly extending portion to which weights are attached to extend said second portion below said water surface, a stress relieving rope connected at spaced apart intervals along said body means by connecting means extending laterally of said body means whereby said boom will retain impurities floating on said water surface.

3,686,871

SHIP ELEVATOR WITH BAFFLE PLATE

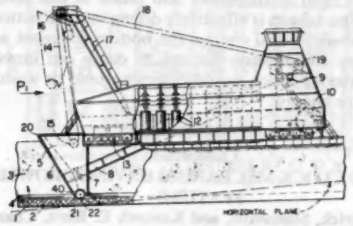
Gerhart Scholler, Bad Schwartau; Robert Baschant, Lubeck, and Alfred Hausler, Bad Schwartau, all of Germany, assignors to Orenstein & Koppel Aktiengesellschaft, Lubeck, Germany

Filed Dec. 22, 1969, Ser. No. 887,093

Claims priority, application Germany, Dec. 21, 1968, P 18 16 403.9

Int. Cl. E02c *3/00*

U.S. Cl. 61—9 4 Claims



A ship elevator includes a channel, having an inclined bottom, interconnecting two bodies of water at different levels, a water wedge terminating baffle movable along the channel, and driving means moving the baffle. The water wedge engaging face of the baffle is inclined from the vertical so that the upper edge of this face is forwardly of the lower edge thereof, considered in the direction toward the water wedge. The baffle is supported from the driving means by a pair of arms which are articulated to the baffle about generally upright pivots and are articulated to the driving means about generally horizontal pivots, and a lift cable arrangement is provided for lifting the baffle from the channel to allow passage of ships therebeneath. The driving means includes driving members movable along rails on the bank of the channel and including a rack and pinion drive, with the rack teeth extending vertically.

3,686,872

SOIL GROUTING PROCESS

Anthony James Whitworth, 65 Commonwealth Ave., Scarborough 702, Ontario; Stephen Yi-Sun Tung, 544 Birchmount Rd., Scarborough 704, Ontario, and Ernest Anthony Hajto, 80 Forest Manor Road, Willowdale, Ontario, all of Canada

Filed June 30, 1970, Ser. No. 51,359

Int. Cl. E02d *3/14*

U.S. Cl. 61—36 R 12 Claims

In a process for stabilizing soil by impregnation with an alkaline aqueous gel-forming composition containing (a) a polyphenolic material such as a vegetable tannin extract and (b) a formaldehyde compound such as paraformaldehyde, a surprising improvement in control of gelling rate is achieved by including in said composition a precalculated amount of (c) gelling agent dispersible in said composition and containing a complexing element selected from silicon, vanadium, molybdenum, manganese, titanium, copper, zinc and zirconium.

3,686,873

CONSTRUCTIONAL WORKS

Henri C. Vidal, 17, rue Armengaud, 92 Saint-Cloud, France

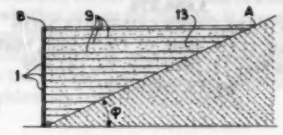
Continuation-in-part of Ser. No. 810,883, Jan. 10, 1969, abandoned, which is a division of Ser. No. 354,947, March 26, 1964, Pat. No. 3,421,326. This application May 25, 1970, Ser. No. 39,956

Claims priority, application France, Aug. 14, 1969, 6927983

Int. Cl. E02d *5/20*

U.S. Cl. 61—39 25 Claims

Cladding for the outer surface of a reinforced earth structure comprising reinforcements embedded in a mass of particles. The cladding comprises cladding elements having a generally plane configuration which are so adapted and arranged in adjacent relation to each other that the cladding is



capable of deforming in directions parallel to the planes of the cladding elements. Methods of connecting the cladding elements to the reinforcements to form a combined cladding and reinforced earth structure are also described.

3,686,874

CAP PULL FOR A MINING FRAME PROP OF AN ADVANCING PIT SUPPORT

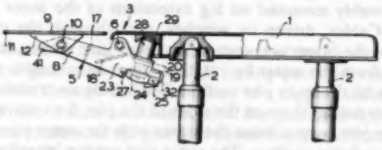
Gunter Bell, Horneburg, Germany, assignor to Klockner-Werke AG, Duisburg, Germany

Filed May 28, 1971, Ser. No. 148,083

Claims priority, application Germany, June 3, 1970, P 20 27 299.5

Int. Cl. E21d *17/10*

U.S. Cl. 61—45 D 6 Claims



A cap pull for a frame prop of an advancing pit support in which the cylinder of the drive piston unit is arranged substantially parallel to the front frame prop and to the supporting force of the breasting cap. The maximum force of the breasting cap is limited by a shear pin arrangement in the connection between the drive piston unit supported in the frame cap and the lever supporting the breasting cap.

3,686,875

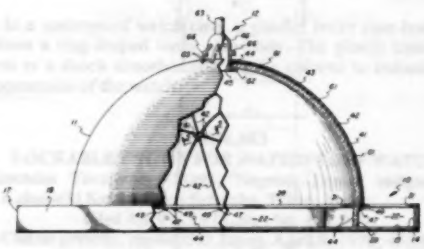
SUBMERGED STORAGE UNIT

George W. Morgan, Anaheim, Calif., assignor to Subsea Equipment Associates Limited, Hamilton, Bermuda

Filed May 1, 1970, Ser. No. 33,763

Int. Cl. E02d *29/00*

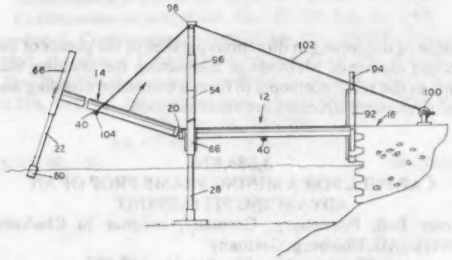
U.S. Cl. 61—46 7 Claims



The unit has a concrete dome fixed to a base also made of concrete. The dome has interlaced prestressed wire ropes, or cables, placing the dome in compression thereby allowing the dome to withstand the tension force resulting when the unit is

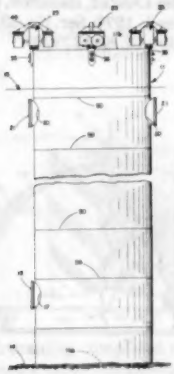
stored with a fluid lighter than water. The cables are arranged preferably in a predetermined pattern to allow efficient use of material.

3,686,876
REMOVABLE PIER CONSTRUCTION
James E. Muschell, 111 N. Main St., Cheboygan, Mich.
Filed May 11, 1971, Ser. No. 142,269
Int. Cl. E02b 3/20
U.S. Cl. 61—48 **13 Claims**



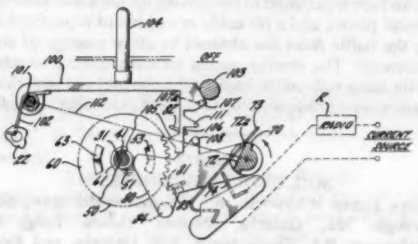
A removable pier having at least two sections pivotably joined end to end and extending from a footing on a shore into a body of water. The pier sections are removably supported on permanent footings for stability. Booms having cable guides are removably mounted on leg extensions of the inner pier section. Cables, driven by winches, pass through the cable guides on the boom and engage the outer pier section for its removal from the water by rotation about its pivotable connection with the inner pier section. The booms are transferred to mounts on the shore at the sides of the pier for removal of the inner pier section from the water with the outer pier section in overlying position. The outer pier section is preferably slightly shorter than the inner pier section so that both pier sections can be stored in upright position on the shore ready for repositioning in the water.

3,686,877
SONIC METHOD AND APPARATUS FOR INSTALLING OFF-SHORE CAISSONS FOR OIL OPERATIONS AND THE LIKE
Albert G. Bodin, 7877 Woodley Ave., Van Nuys, Calif.
Filed Feb. 18, 1971, Ser. No. 116,396
Int. Cl. E02d 7/18, 19/00
U.S. Cl. 61—53.5 **7 Claims**



A relatively wide diameter caisson member is placed in the water in a desired off-shore position with the bottom end thereof being forced biased into the sediment by virtue of the weight of the caisson, and with the open opposite end thereof protruding above the surface of the water. A plurality of sonic oscillators are coupled to the portion of the caisson above the surface. These oscillators are each adapted to provide vibrational energy to the casing principally along the longitudinal axis thereof with a minimum component of transverse vibration. The oscillators, each of which is separately driven and capable of delivering only a portion of the power needed to effectively drive the caisson, are driven at a frequency such as to cause resonant elastic vibration of the caisson in a predominantly single longitudinal mode, the separate oscillators tending to adjust both in frequency and phase at this resonant frequency. The caisson is effectively driven into the bottom by virtue of the vibrational energy, the bottom sediment acting on the heavy compression column to damp out unwanted vibrational modes which would otherwise tend to wastefully dissipate sonic energy.

3,686,878
RADIO CLOCK MECHANISM HAVING DROWSE FEATURE
Alan E. Patrick, Statesville, and Kenneth E. Kern, Charlotte, both of N.C., assignors to General Time Corporation, Stamford, Conn.
Filed Oct. 16, 1969, Ser. No. 866,997
Int. Cl. G04f 3/00
U.S. Cl. 58—21.155 **6 Claims**



An alarm clock mechanism for turning on a radio at a preset time and which permits the user, by pressing a drowse button, to have a few minutes of additional silence, if desired, before the radio is again turned on. For controlling the mechanism a selector shaft is provided having a selector arm which operates a switch, the shaft being biased to a central "on" position and manually rockable in opposite directions into detented "off" and "auto" positions. When the arm is manually set to the "auto" position, the arm is interposed in the path of movement of the alarm triggering mechanism, which releases the engaged detent for restoration of the arm to its central "on" position to turn on the radio. A drowse arm is provided having a pawl which cooperates with the minute wheel of the clock as well as a first stop surface which engages the selector arm, so that when the drowse arm is pressed, the pawl clicks idly over the teeth into engaged position accompanied by movement of the selector arm to the "off" position, with subsequent gradual restoration of the pawl to a freed position as the minute wheel rotates to define a "drowse" time interval. As the pawl is freed from the minute wheel the selector arm is forceably restored to the central "on" position for turning on the radio. The stop surfaces are so positioned that the selector arm may move independently of the drowse arm as long as the latter is in its inactive, or non-depressed condition. The construction and operation are such as to permit use of multifunction parts made of flexible plastic.

3,686,879

DIGITAL CLOCK WITH ALARM

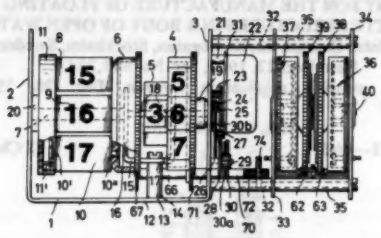
Gunter Hummel, Carl-Benz-Strasse 6, D-755 Rastatt, Baden, and Erich Scheer, Bergstrasse 28, D-7744 Peierzell, Black Forest, both of Germany

Filed Dec. 28, 1970, Ser. No. 101,974

Claims priority, application Germany, Dec. 27, 1969, P 19 65 205.2; April 26, 1970, P 20 20 214.6

Int. Cl. G04c *21/00, 21/16*

U.S. Cl. 58—38 21 Claims



An alarm clock with coaxial digit wheels for one-minute, ten-minute and hour indications has a pair of contact-carrying disks, rotatable about the same axis, mechanically coupled with the 1-minute wheel and with the hour wheel, respectively, for entrainment thereby. Each disk confronts an associated selector drum bearing minute and hour indications, respectively, these disks being independently settable to display the time when the alarm is to ring. Each drum consists of insulating material and carries a terminal of an alarm circuit positioned to engage a contact near the periphery of the associated disk whenever the latter occupies a position corresponding to the selected drum setting; the disks are always conductively interconnected, by a contact spring on one disk engaging a metallic track on the other disk, so that the alarm circuit is completed when both disks occupy their preselected positions. With the digit wheels and the drums stepped intermittently, at 1-minute intervals in the case of the wheel of lowest denomination, the alarm circuit is reopened after a minute.

3,686,880

ELECTRONICALLY CONTROLLED STOP WATCH

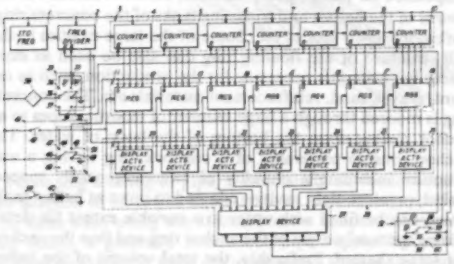
Toshihide Samejima, 21-1, 5-chome, Katsutadai, Yachiyo, Japan

Filed Sept. 7, 1971, Ser. No. 17,806

Claims priority, application Japan, Sept. 4, 1970, 45/77246; Sept. 4, 1970, 45/88287

Int. Cl. G04f *3/06*

U.S. Cl. 58—39.5 11 Claims



An electronically controlled stop watch in which the output frequency of a standard frequency oscillator is divided by a frequency divider means, the divided frequency is counted by a counter means, the starting and stopping of this counting are controlled by a start-stop switch means, and by supplying power to a display means and a register means by the operation of a time display switch means, the content of said counting is displayed in a display device. Preferably a single indicating lamp indicates the off-on condition of a main power switch and also whether or not the counter is counting. The display means is preferably powered by an output of the frequency divider to conserve power. Moreover, reset means is preferably related to the counter control so that the register means cannot be accidentally reset during counting.

3,686,881

CHRONOGRAPH MECHANISM

Herbert F. Lesser, Ruhla; Manfred H. Schmeisser, Brotterode, and Artur F. Kamp, Thal, all of Germany, assignors to VEB Uhrenkombinat Ruhla, Ruhla, Germany

Filed July 27, 1970, Ser. No. 58,329

Int. Cl. G04f *7/04*

U.S. Cl. 58—76 8 Claims

In the drive train to the second hand of a stop watch is provided a gear mounted upon a rotating post to be moveable therewith through the intermediary of a slipping clutch means and brake means associated with the gear and operable to prevent rotation of the gear and hence the second hand and to allow rotation of the post.

3,686,882

WATERTIGHT WATCH CASES FOR WRIST WATCHES

Yoshiaki Fujimori, Suwa, Japan, assignor to Kabushiki Kaisha Suwa Seikasha, Tokyo, Japan

Filed March 12, 1970, Ser. No. 18,990

Int. Cl. G04b *37/08*

U.S. Cl. 58—90 R 3 Claims

In a waterproof watch case, a plastic, outer case-body encloses a ring-shaped inner case-body. The plastic case-body acts as a shock absorber and can be colored to enhance the appearance of the watch.

3,686,883

LOCKABLE CROWN FOR WATERPROOF WATCH

Yasutaka Tarusawa, Okaya, Nagano, Japan, assignor to Kabushiki Kaisha Suwa Seikosha, Tokyo, Japan

Filed April 6, 1971, Ser. No. 131,746

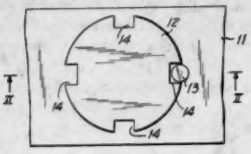
Claims priority, application Japan, April 9, 1970, 45/29796

Int. Cl. G04b *37/08*

U.S. Cl. 58—90 B 7 Claims

Unintentional rotation of the crown of a waterproof watch and consequent impairment of the seal against entry of water is prevented by rotating the crown relative to the case body to bring a projection on one of these members into registry with a

matching recess in the other and depressing the crown,



thereby inserting the projection into the recess and locking the crown against rotation.

3,686,884
WATCH

Zeno Hurt, Mohlin, Switzerland, assignor to Agon Uhrenfabrik Robert Friebold A.G., Mumpf, Switzerland

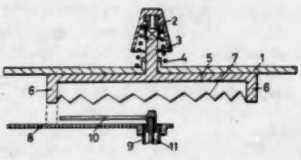
Continuation-in-part of Ser. No. 822,177, May 6, 1969, Pat. No. 3,533,228. This application June 9, 1970, Ser. No. 44,852
Claims priority, application Switzerland, Dec. 24, 1968, 19267/68; June 12, 1969, 8960/69
Int. Cl. G04b *19/06*
U.S. Cl. 58—127 R **2 Claims**

Watch with coaxial minutes and hours discs, the minutes disc having indications for 0 to 29 minutes in a first color and 30 to 59 minutes in a second color and, having a third disc for indicating seconds or dates. Each hour indication is repeated, one in the first color, the other in the second, and successive hour indications in different colors are visible through the dial.

3,686,885
TIMEPIECE WITH SWEEP SECOND HAND AND HAND-SETTING MEANS

Albrecht Haag, Goehestr. 4, 7220 Dauchingen, and Roland Siefert, Im Herrengerten 6, 7737 Bad Durrheim, both of Germany

Filed Aug. 10, 1970, Ser. No. 62,562
Claims priority, application Germany, Aug. 20, 1969, P 19 42 254.9; Aug. 29, 1969, P 19 43 945.3
Int. Cl. G04b *27/00*
U.S. Cl. 58—85.5 **3 Claims**

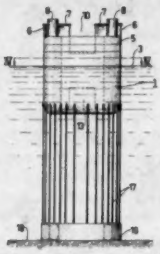


The invention relates to a timepiece with hand-setting means extending coaxially with the hand spindles, in particular for use in connection with a dashboard or car clock set or arranged in a control panel with inaccessible rear plate, which is equipped with hand-setting means to be brought into operative connection with the minute hand from the front end of the timepiece having a sweep second hand which, however, when actuating the hand-setting means is not affected during its motion and function.

3,686,886
PLANT FOR THE MANUFACTURE OF FLOATING CONCRETE STRUCTURES IN A BODY OF OPEN WATER

Hans Christer Georgii, 42, Rindogatan, Stockholm, Sweden

Filed Dec. 22, 1969, Ser. No. 887,224
Claims priority, application Sweden, Dec. 20, 1968, 17706/68
Int. Cl. E02d *29/06*
U.S. Cl. 61—46.5 **12 Claims**

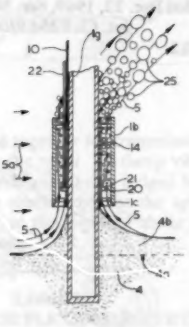


A plant for the manufacture of floating concrete structures in open and substantially unsheltered bodies of water, comprising a concrete ring floating in the water with its axis normally substantially vertical and its upper end above the water surface. The wall structure of the concrete ring includes a plurality of circumferentially spaced, pressure-tight, preferably cylindrical cavities extending in the axial direction of the ring. At least some of these cavities are adapted to serve as ballast and trimming tanks which can be filled with water to a variable extent, whereby the buoyancy, the floatation height and the attitude of the concrete ring in the water can be controlled. The total volume of the cavities is such that the total displacement of the concrete ring exceeds substantially the total dead-weight of the ring. The water area enclosed by the concrete ring is efficiently protected against wave motions, currents and winds, wherefore the manufacture of floating concrete structures can take place in this water area substantially without any disturbances from weather forces. The upper ring-shaped end of the floating concrete ring supports all those apparatuses, equipments, devices and facilities that are necessary for the production, such as concrete mixing stations, cranes, elevators, conveyors, electric power plants, compressed air plants, pump stations, control stations for the control of the ballast and trimming tanks of the concrete ring, workshops, crew spaces etc. Some of the large cavities in the wall structure of the floating ring can also be used as store spaces for materials necessary for the production, such as cement, gravel, sand, reinforcement materials etc. The concrete ring is moored through a large number of mooring ropes to an anchor resting upon the bottom of the body of water. The anchor consists preferably of a concrete ring having a wall structure including a plurality of circumferentially spaced, sealed, pressure-tight cavities adapted to serve as ballast tanks which can be filled with water to a variable extent for determining the total weight of the anchor ring and thus the anchoring force thereof. Preferably, the total volume of the ballast tanks in the anchor ring is such that the displacement of the anchor ring in the water exceeds the dead-weight of the anchor ring, whereby this can be brought to a floating position in the surface of the water in that the ballast tanks are emptied. In this way the anchor ring can be towed in a floating position to the intended site of use.

3,686,887
SCOUR CONTROL SYSTEM FOR SUBMERGED STRUCTURES

Peter Bruce, 10 Torphichen Place, Edinburgh, EH3 8DU, Scotland

Filed Jan. 13, 1970, Ser. No. 2,501
Claims priority, application Great Britain, Jan. 17, 1969, 2,927/69; Jan. 25, 1969, 4,351/69
Int. Cl. E02b 3/00
U.S. Cl. 61—63 17 Claims

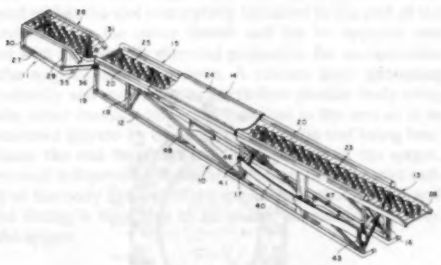


A scour control system for establishing and maintaining convergent fluid flow conditions at the surface of a submerged particulate bed circumjacent to a submerged structure seated on the bed so that particle loss from the surface of the bed, within a closed region surrounding the structure, is eliminated as being the normal consequence of externally incident unidirectional fluid flow past the submerged structure at the particulate bed surface.

3,686,888
PIPE LAYING APPARATUS

Marion P. Helton, P. O. Box 162, Plummerville, Ark.

Filed Feb. 19, 1970, Ser. No. 12,717
Int. Cl. F16l 1/00; B65g 15/08
U.S. Cl. 61—72.1 13 Claims

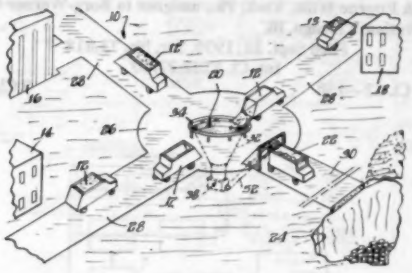


For laying a string of pipe, a main sled and the trailer sled are adapted to be towed in a trench by a trenching machine. The sleds slide along the trench bottom on parallel runners and define a generally continuous pipe supporting surface inclined downwardly from the leading end toward the trailing end. The sled supports the end of the assembled pipe string, the next pipe section to be joined to the string for facilitating the assembly. The sleds are self centering within the trench and carry implements for preparing the trench bottom to receive the pipe string.

3,686,889
SYSTEM FOR COMPLETELY DISPOSING OF REFUSE

Richard D. Harza, 400 W. Madison St., Chicago, Ill.

Continuation-in-part of Ser. No. 677,206, Oct. 23, 1967, Pat. No. 3,514,969, which is a continuation-in-part of Ser. No. 29,805, April 20, 1971. This application Aug. 20, 1970, Ser. No. 65,417
Int. Cl. F25d 25/00
U.S. Cl. 62—62 12 Claims

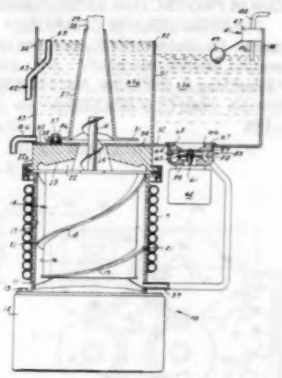


A system for disposing of refuse which comprises the steps of: transferring the refuse from various remote locations to a central collection point; moistening the refuse in the event the same does not contain sufficient moisture to allow adherence when frozen; compressing the refuse; freezing the refuse so as to form dense pellets; and transporting the pellets to a final destination, preferably a land-fill operation.

3,686,890
METHOD AND APPARATUS FOR FORMING A CLEAR ICE PRODUCT

John B. Lyman, Bloomington, Minn., assignor to Whirlpool Corporation, Benton Harbor, Mich.

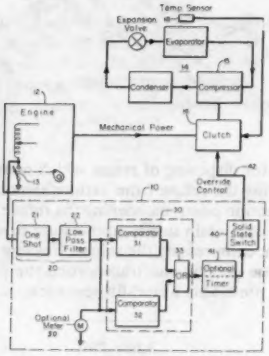
Continuation of Ser. No. 867,248, Oct. 17, 1969, abandoned. This application June 30, 1971, Ser. No. 158,619
Int. Cl. F25c 1/14
U.S. Cl. 62—67 22 Claims



A method and means for forming clear ice wherein impurities and vapor or trapped bubbles are removed from the water introduced into an ice maker. Impurities and bubbles may be conveniently removed from the water by providing means for circulating the inlet water during freezing of a portion thereof including a tank containing a pool of water, purging a portion of the water to remove impurities therefrom, and working the water in a manner to liberate bubbles therefrom. Purge outlet means in the tank remove settled or floating impurities such as minerals and impeller-type pump means in an inlet conduit

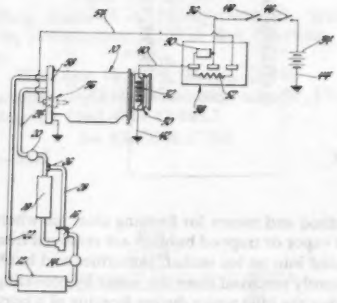
work the inlet water to beat bubbles therefrom and deliver bubble free inlet water to the ice maker. The unfrozen water including the excess water removed from the flake ice product as the same is forced through the confined columnar path is continuously recirculated during ice maker operation.

3,686,891
ELECTRONIC SAFETY CONTROL SYSTEM FOR VEHICLE COMPRESSORS
Frank Eugene Wills, York, Pa., assignor to Borg-Warner Corporation, Chicago, Ill.
Filed Sept. 21, 1970, Ser. No. 73,818
Int. Cl. F25b *27/00*
U.S. Cl. 62—158 **9 Claims**



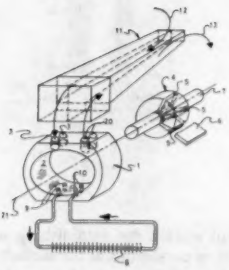
A control system for decoupling the mechanical drive between a vehicle mounted air conditioning compressor and the vehicle's engine in response to sensed engine speeds beyond a high level.

3,686,892
COMPRESSOR PROTECTOR RESPONSIVE TO LOW REFERGERANT CHARGE
Arthur T. Bassett, Jr., Dayton, Ohio, assignor to General Motors Corporation, Detroit, Mich.
Filed May 5, 1971, Ser. No. 140,498
Int. Cl. F25b *27/00*
U.S. Cl. 62—158 **3 Claims**



A compressor protector system for an air conditioning system having a compressor driven by an automobile engine through an electromagnetic clutch. When the refrigerant charge level falls below a level necessary for compressor cooling and lubrication, a thermally responsive fuse in the clutch energization circuit is made to open by a resistance wire heater. The wire heater is energized by the closing of a superheat switch responsive to the refrigerant temperature in the compressor inlet.

3,686,893
AIR REFRIGERATION DEVICE
Thomas C. Edwards, West Lafayette, Ind., assignor to Purdue Research Foundation
Filed Dec. 22, 1969, Ser. No. 886,979
Int. Cl. F25d *9/00*
U.S. Cl. 62—402 **11 Claims**



A single fluid (air to air) refrigeration device which includes compressor and expander sections with a single heat exchanger disposed therebetween employing an open reversed Brayton cycle in operation.

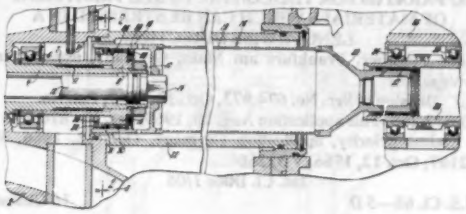
3,686,894
TOY-CONTAINING LOCKET
Elliot Handler; John W. Ryan, both of Los Angeles; Jack L. Lemkin, Torrance, and Ralph Dunn, Los Angeles, all of Calif., assignors to Mattel, Inc., Hawthorne, Calif.
Filed Feb. 27, 1967, Ser. No. 618,800
Int. Cl. A44c *15/00*
U.S. Cl. 63—19 **5 Claims**

A locket device having a rear cover, a transparent front member, and a figure toy removably insertable in the locket. the rear cover has a recess accommodating the head of the figure toy and carries a clip for attaching the locket to a user's pocket and an easel for standing the locket up on a suitable surface.

3,686,895
DAMPED SHAFT COUPLING

Sydney Eugene Easley, Indianapolis, Ind., assignor to General Motors Corporation, Detroit, Mich.

Filed March 19, 1971, Ser. No. 126,144
Int. Cl. F16d 3/06
U.S. Cl. 64—1 V 2 Claims

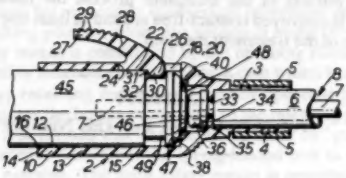


Two shafts are splined together for transmission of torque, one being supported by the other. To damp vibration in the shafting which causes wear, an O-ring lodged between overlapping portions of the shafts adjacent the splines is compressed radially by them to the extent of about one-fourth of its original radial thickness.

3,686,896
END FITTINGS FOR FLEXIBLE DRIVE CABLES

Kenneth A. Rutter, Bushey Heath, England, assignor to Smiths Industries Limited, London, England

Filed Sept. 29, 1969, Ser. No. 861,930
Int. Cl. F16g 1/06
U.S. Cl. 64—4 3 Claims



An end fitting for attaching the outer sheath of a flexible drive cable to an annularly grooved spigot, comprises a hollow generally cylindrical plastics body having a longitudinally directed closed-ended slot. One end of a resilient arm disposed within the slot is integrally moulded to the end of the slot remote from the outer sheath and has its opposite end formed with an inwardly directed projection for co-operation with the spigot's annular groove. A release lever extending longitudinally and outwardly of the hollow plastics body away from the outer sheath is integrally moulded to the arm so as to be connected thereto by one end, the opposite end being free. To release the end fitting from its engagement of the spigot, the free end is depressed to cause the projection to move outwardly of the body and out of the spigot's annular groove, and the end fitting is thus free to be pulled longitudinally away from the spigot.

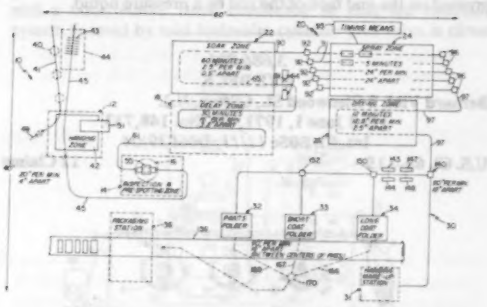
3,686,897
Patent Not Issued For This Number

3,686,898
Patent Not Issued For This Number

3,686,899
LAUNDERING SYSTEM

Howard Rosenfeld, New York, N.Y., and Justin J. Wetzler, Evanston, Ill., assignors to The Linen Supply Association of America, Miami Beach, Fla.

Filed July 16, 1970, Ser. No. 55,468
Int. Cl. D06f 31/00
U.S. Cl. 68—3 R 24 Claims

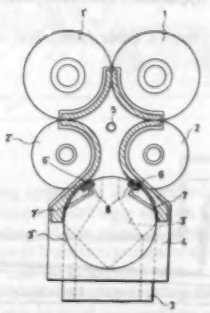


A laundering and finishing system for garments (such as no-iron garments) collected from a number of user sources of soiled garments includes a hanging zone, a washing zone including spray assemblies, a drying zone, and a conveyor network extending from the hanging station through the washing and drying zones, the conveyor network being adapted to support individual garments on hangers to hang loosely for washing and wrinkle-free drying in the zones, the hanging zone being arranged to enable a worker to hang soiled garments from one user source at a time in serial order upon an initial conveyor of the conveyor network, and the conveyor network being further adapted to discharge the garments in the same serial order so that garments originating from different sources of soiled garments are not mixed.

3,686,900
PRESSURE SEALING APPARATUS

Yoshikazu Sando, and Masao Takasu, both of Wakayama, Japan, assignors to Sando Iron Works Company Limited, Wakayama-shi, Japan

Filed Feb. 4, 1970, Ser. No. 8,548
Claims priority, application Japan, May 29, 1969, 44/42010; Oct. 16, 1969, 44/82778; Nov. 17, 1969, 44/92018; May 23, 1969, 44/47701; Sept. 3, 1969, 44/83692; Dec. 22, 1969, 44/90521; Dec. 22, 1969, 44/90522; Nov. 4, 1969, 44/104656
Int. Cl. F26b 25/00; D06f 39/00
U.S. Cl. 68—5 E 1 Claim



A pressure sealing apparatus comprising a seal drum or a seal block having a hole for the passage of cloth, installed on the opening for guiding cloth in and out of a pressure chamber; rolls which are pressed through intermediate rolls

on the seal drum or the seal block and are rotated in contact with each other for putting cloth in and out; and a sealing end plate which is engaged with the seal drum or the seal block to be able to move in an axial direction and which is pressed on each end face of the said drum or block and the above said rolls; and which is characterized in that the before mentioned sealing end plate is made as a metallic case, having a flexible sealing material laid on the side, which is pressed on the end face of each roll, and the flexible sealing material is uniformly pressed on the end face of the roll by a pressure liquid.

3,686,901

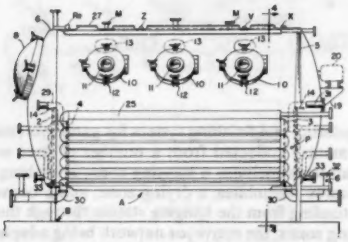
DYE BECK

Bernard Vihl, 2 Glenwood St., Clifton, N.J.

Filed June 1, 1971, Ser. No. 148,733

Int. Cl. B05c *11/11*; D06f *39/04*

U.S. Cl. 68—15 **12 Claims**



A dye beck or vat assembly having longitudinally spaced transverse partitions therein defining with an enclosing shell a dyeing liquid containing compartment through which the fabric to be dyed is moved in which heat transfer fluid conduit means are directly formed with and extend over a substantial area of the face of each partition non-adjacent the dyeing liquid, a substantial area of the outer wall surface of the lower half of the shell and a portion of the outer wall surface of the top of the shell, so that when heating fluid circulates through all of those conduit means the formation of visible vapors in the space above the dyeing liquid is minimized and the progress of the dyeing process may be observed through observation ports provided in the shell.

3,686,902

APPARATUS FOR THE HEAT-TREATMENT OF TEXTILE MATERIAL

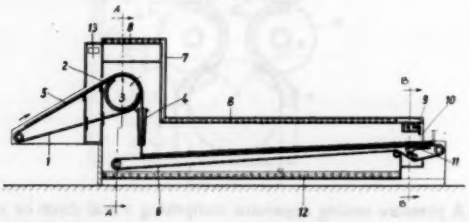
Heinz Fleissner, and Gerold Fleissner, both of Egelsbach, Germany, assignors to Vepa AG

Continuation-in-part of Ser. No. 655,549, July 24, 1967, Pat. No. 3,503,231. This application March 24, 1970, Ser. No. 22,169

Claims priority, application Germany, March 24, 1969, P 19 14 885.7

Int. Cl. D06c *1/06, 1/10*

U.S. Cl. 68—5 D **21 Claims**



The present disclosure is directed to a process and apparatus for the heat-treatment of textile materials wherein the material to be treated, for example thick material layers, can be heated shock-like to the treatment temperature and subsequently heated very uniformly. According to the present disclosure the treatment medium, for example steam, is evenly distributed throughout the treatment chamber.

3,686,903

APPARATUS FOR THE CONTACT-FREE TREATMENT OF MATERIALS WHICH CAN BE STRESSED IN A LENGTHWISE DIRECTION

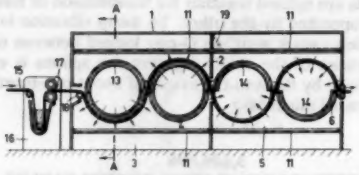
Hans Fleissner, Frankfurt am Main, Germany, assignor to Vepa AG

Division of Ser. No. 674,973, Oct. 12, 1967, Pat. No. 3,512,265. This application Aug. 20, 1969, Ser. No. 870,792

Claims priority, application Germany, Oct. 12, 1966, V 32107; Oct. 12, 1966, V 32260

Int. Cl. D06c *1/06*

U.S. Cl. 68—5 D **16 Claims**



The present disclosure relates to a process and apparatus for the heat-treatment, especially the drying or steaming of materials which can be stressed in the lengthwise direction. More particularly, the present disclosure is directed to the contact-free heat-treatment of materials wherein during at least a portion of the treatment process the material being treated is conveyed contact-free around at least one drum on a cushion of the treatment medium.

3,686,904

Patent Not Issued For This Number

3,686,905

METHOD AND MACHINES FOR DYEING TEXTILE PIECE GOODS

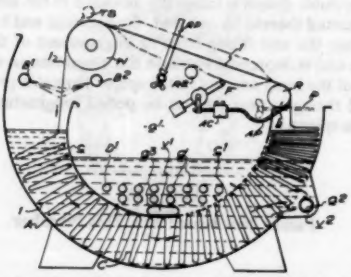
Edward Stanway, Prestbury, England, assignor to Leemetals Limited, Macclesfield, England

Filed Nov. 17, 1969, Ser. No. 877,401

Claims priority, application Great Britain, Nov. 20, 1968, 55,012/68

Int. Cl. B05c *3/134, 9/04*

U.S. Cl. 68—62 **2 Claims**

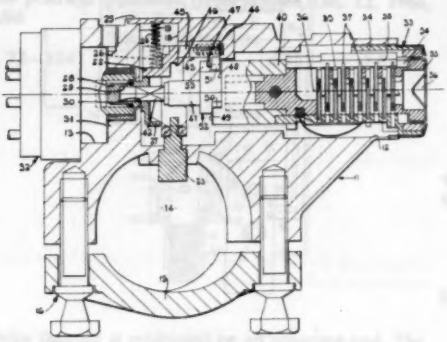


A method and machine for the dyeing of fabrics in open width or rope form in a winch dyeing machine in which the fabric in a pleated state is assisted along an arcuate chute by liquor supplied at one end thereof and withdrawn at the other end thereof at a lower level than the supply.

3,686,906
LOCKING DEVICE

John Watkins, Wednesfield, and Reginald James, Darlaston, both of England, assignors to Lowe & Fletcher Limited

Filed Aug. 26, 1970, Ser. No. 67,105
Int. Cl. B60r 25/02
U.S. Cl. 70—252 31 Claims



A locking device for locking the steering column of a motor road vehicle and comprising a body, a spring-loaded bolt mounted therein for engagement with the rotatable shaft of the steering column, switch means for controlling the ignition circuit of the vehicle, and a key-operated lock for operation of the locking device is provided with a retaining element which holds the bolt in a releasing position in the absence of the key-operated lock. The key-operated lock forms part of a unit which can be inserted into the body after the latter has been fitted to a vehicle. The locking device includes three separate safety means for preventing inadvertent movement of the bolt to the locking position whilst the vehicle is being driven. The first safety means is constituted by the retaining element. The second safety means is constituted by a cam which is rotatable with a key-receiving member of the key-operated lock and which engages the bolt to move same to the releasing position. This cam is so formed that when in an "ignition on" position it cannot transmit drive from the spring-loaded bolt to the key-receiving member. The third safety means is constituted by a member which deadlocks the retaining element in its operative position whilst the key-receiving member is in an "ignition on" position.

ERRATUM

For Class 72—396 see:
Patent No. 3,686,952

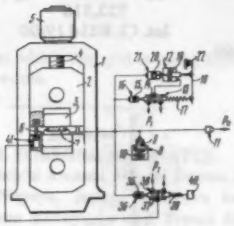
3,686,907
DEVICE FOR AUTOMATIC THICKNESS CONTROL OF ROLLED STRIPS

Evgeny Vyacheslavovich Sokolov, ulitsa Kostycheva, 4, kv. 30; Eduard Petrovich Yashkin, ulitsa Novogodnyaya, 13, kv. 78; Vadim Ivanovich Sysoev, ulitsa Bijukhera, 59, kv. 31; Rady Savvich Kozhevnikov, ulitsa Stanislavskogo, 11, kv. 74; Alim Ivanovich Chabanov, ulitsa Bijukhera, 46, kv. 7, all of Novosibirsk; Mikhail Ivanovich Shinkarenko, ulitsa Lenina, 2, kv. 85, Kramatorsk; Petr Stepanovich Grinchuk, ulitsa im. 19. Partsiezda, 65, kv. 9, Kramatorsk; Georgy Georgievich Fomin, ulitsa Katerinicha, 3, kv. 22, Kramatorsk, and Vladimir Ivanovich Rusaev, ulitsa Vatutina, 47, kv. 28, Novosibirsk, all of U.S.S.R.

Filed March 4, 1971, Ser. No. 120,845
Int. Cl. B21b 37/00
U.S. Cl. 72—6 9 Claims

A device for automatic thickness control of rolled strips which ensures an accuracy of the rolled material from ±0.002 mm to ±0.003 mm, does not call for major capital expenses and long stops of the rolling mills for its introduction and is characterized by high operating reliability and simple servicing.

The device for automatic thickness control of rolled strips in installations for the manufacture of strip materials, comprising symmetrically located on both sides of the roll stand at least one hydraulic power cylinder installed between the supports of the working rolls, a damping hydraulic cylinder whose piston is fixed while the strip is passing through the roll stand, and a controllable valve connected so that the hydraulic system formed by said hydraulic cylinder and valve is closed

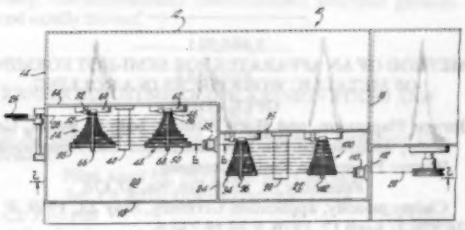


and creates a local increase in the rigidity of the roll stand within the range of forces which is approximately equal to the range of variations of the rolling pressure from the preset value. The device has a positive feedback circuit actuated by the fluid pressure in the closed hydraulic system, this circuit comprising a pressure meter in the hydraulic power cylinder, an element for comparing the measured deviation of pressure with the value proportional to the preset coefficient of positive feedback, connected with the pressure meter, and an actuating element connected to said comparison element and to the correcting element made in the form of a hydraulic cylinder communicating with the hydraulic power cylinder.

3,686,908
WIRE DRAWING APPARATUS AND METHOD

Frederic B. Krafft, Hastings-on-Hudson, N.Y., assignor to Wire Technology and Machinery Co., Inc., Newark, N.J.

Filed Feb. 1, 1971, Ser. No. 111,440
Int. Cl. B21b 45/02; B21c 1/04
U.S. Cl. 72—43 16 Claims



A wire drawing apparatus and method is disclosed which comprises the process of drawing wire on multiple die slip type machines consisting of the steps of separating the dies and their capstans into at least two groups of one or more dies such that each group can be lubricated with a separate lubricant. The machine for improved wire drawing has the dies and capstans separated into at least two sections of one or more dies and capstans such that different lubricants can be used in each section. The seal between the sections is made by a die attached to a separator wall which separates the sections.

3,686,909

Patent Not Issued For This Number

3,686,910

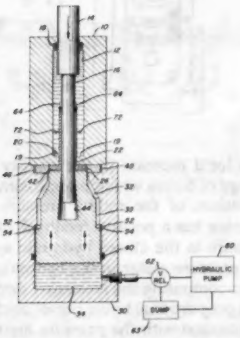
METHODS OF AND APPARATUS FOR HYDROSTATIC FORMING

Francis Joseph Fuchs, Jr., Princeton Junction, N.J., assignor to Western Electric Company, Incorporated, New York, N.Y.

Continuation-in-part of Ser. No. 461,250, June 4, 1965, abandoned. This application March 20, 1968, Ser. No. 722,516

Int. Cl. B21d *19/00*

U.S. Cl. 72—60 **18 Claims**



Deforming of a workpiece wherein a workpiece is clamped between high friction and low friction surfaces and frictional forces are utilized to transport the workpiece over the low friction surface and into engagement with a die surface. Further, the forming of a projection, in particular a flange, on a plastically deformable member by flaring a portion of the member and by building up hydrostatic pressure in the member, including the flared portion, sufficiently high to place the member in a plastic state and cause a portion of the member, including the flared portion, to flow and increase in thickness thereby forming the projection. The hydrostatic pressure is built up in the member by the application of hydrostatic pressure from a pressurized fluid medium, or by the mechanical application of pressures.

3,686,911

METHOD OF AN APPARATUS FOR SEMI-HOT FORMING OF METALLIC WORKPIECES IN A ROLLING OPERATION

Jurgen Plagemann, and Horst Conrad, both of Berlin, Germany, assignors to Pee-Wee Maschinen und Apparatebau Werner Plagemann, Berlin, Germany

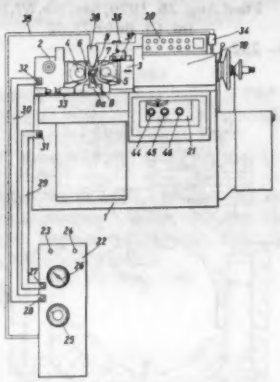
Filed May 14, 1970, Ser. No. 37,178

Claims priority, application Germany, May 23, 1969, P 19 26 976.2; April 17, 1970, P 20 19 734.6

Int. Cl. B21h *1/00, 3/00*

U.S. Cl. 72—69 **27 Claims**

In a semi-hot forming operation, a workpiece is supported between two tool rollers which are rotated in the same direction. During the rotational cycle of the rollers the workpiece is first electrically preheated to a desired temperature after which the forming operation takes place. The contact pressure between the rollers and the workpiece is relatively low during the preheating operation and is increased when the roll forming takes place. To heat the workpieces effectively, the rotational speed of the roller can be varied to preheat at a regulatable reduced speed and then to form the workpiece at an increased rate of speed. The circumferential surfaces of the rollers are segmented with a smooth portion and a profile portion, with the preheating taking place when the smooth part of



the rollers are in contact with the workpiece and the forming taking place when the profile portion is in contact with the workpiece.

3,686,912

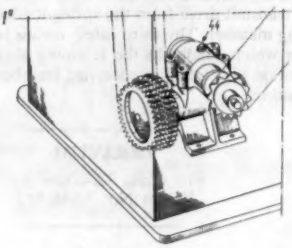
AUTOMATIC ROTARY-SWAGING MACHINE FOR REDUCING METAL-WIRE PARTS

Naum Iosifovich Beletsky, and Mikhail Lvovich Chepovetsky, both of Kiev, U.S.S.R., assignors to Vsesojuzny Proektno-Konstruktorsky Institut Svarochnogo Proizvodstva, Kiev, U.S.S.R.

Filed Nov. 18, 1969, Ser. No. 877,664

Int. Cl. B21j *9/06*

U.S. Cl. 72—70 **7 Claims**



An automatic rotary swaging machine for reducing parts from wire, such as bycycle spokes and the like, providing continuous operation without time losses for idle runs so as to enhance its efficiency, comprising a reducer head for swaging the wire, a continuous wire feed mechanism and a cut-off mechanism for cutting the reduced part during the motion of the wire wherein the continuous feed of wire, in combination with a cut-off of the reduced part, provides for a highly efficient automatic rotary swaging machine and a high quality for the produced parts.

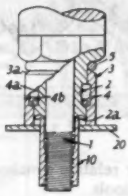
3,686,913

Patent Not Issued For This Number

3,686,914
METHOD OF SETTING TUBULAR FASTENERS

Eric Powsey, Lichfield, England, assignor to Linread Limited, Birmingham, England

Division of Ser. No. 673,743, Oct. 9, 1967, abandoned. This application Aug. 28, 1970, Ser. No. 68,043
Claims priority, application Great Britain, Oct. 12, 1966, 45,671/66
Int. Cl. B21j 15/04
U.S. Cl. 72—114 2 Claims

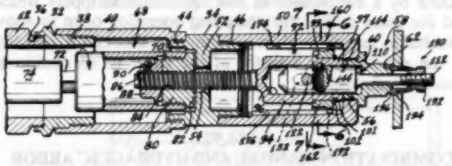


A tubular fastener is positioned on an upsetting tool. The tool is operated to retract a mandrel thereof axially with respect to an anvil thereof. This applies an axial force to the fastener, thus causing the mouth thereof to flare outwardly to form a rivet head. Further outward flaring is restricted while continuing the application of the axial force. This causes an unthreaded portion of the fastener to bulge outwardly.

3,686,915
INSTALLATION TOOL FOR FASTENERS REQUIRING ROTARY AND AXIAL MOVEMENTS

Delmar S. Miller, 918 Balboa, Newport Beach, Calif., and Kenneth V. Cushman, 2138 Salta St., Santa Ana, Calif.

Continuation-in-part of Ser. No. 749,677, Aug. 2, 1968. This application Dec. 2, 1970, Ser. No. 94,626
Int. Cl. B21d 9/05
U.S. Cl. 72—114 12 Claims



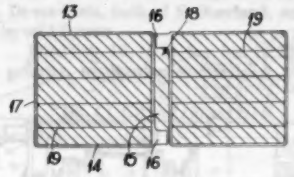
An installation tool for fasteners of the type wherein a nut part which is internally threaded is pulled axially to expand and/or clamp an extending sleeve part of the fastener to set it with respect to the material in which it is being used. The tool is power driven and imparts rotary motion initially to thread the nut part of the fastener into a threaded sleeve, and then to abruptly stop rotary motion and exert a strong axial pull for setting the fastener.

3,686,916
ROLLS FOR USE IN MANUFACTURE OF BATTERY

Dexter William Smith, 284 Robin Hood Lane, Birmingham, and Alan Williams, 96 Union Rd., Solihull, both of England

Filed March 12, 1970, Ser. No. 19,000
Claims priority, application Great Britain, April 2, 1969, 17,164/69
Int. Cl. B21h 8/00, 9/00
U.S. Cl. 72—198 2 Claims

A roll for use in the manufacture of a battery plate grid is used in conjunction with a further roll, each roll having at least one separate impression of one face of the required grid. The space on each roll whose base is defined by the upper frame member and whose height is defined by a lug extending from the upper frame member, is formed with interruptions into

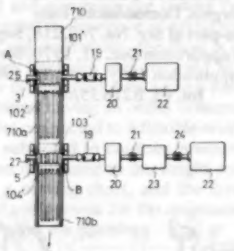


which the strip from which the grid is being formed will key during the rolling process.

3,686,917
ROLL FORMING APPARATUS

Ryotaro Hikida; Taikichi Awano; Atsushi Danno, and Yoshiro Kojima, all of Nagoya, Japan, assignors to Kabuskiki Kaisha Toyota chuo Kenkyusho and Toyota Shatai Kabushiki Kaisha, both of Nagoya, Japan

Filed April 6, 1971, Ser. No. 131,683
Int. Cl. B21d 5/16
U.S. Cl. 72—187 1 Claim



A roll forming apparatus for impressing upon a plate corrugation of finite length. Spaced longitudinally a predetermined distance are two synchronously operated roll couples for preliminary and finish forming. Each roll couple has complementary, circumferentially discontinuous, ribs and grooves spaced axially thereof.

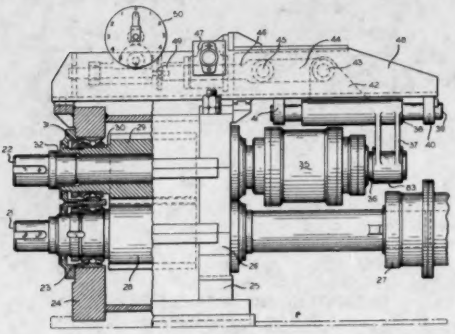
3,686,918
VERNIER ADJUSTMENT FOR A PINION STAND AND THE LIKE

Ranjit K. Chatterjee, Reading, Pa., assignor to Birdsboro Corporation

Filed April 15, 1971, Ser. No. 134,343
Int. Cl. B21h 3/04; B21b 7/02, 31/16
U.S. Cl. 72—198 7 Claims

A pair of rolls each having a peripheral groove in which there is an embossed half-thread. The rolls are on parallel shafts which are driven by a pinion stand. The pinion stand is provided with a device for making a vernier adjustment of the top roll's circumferential or rotational angle position with respect to the bottom roll so that the half-threads thereon will impress a smooth, continuous full thread on a rod passing between the rolls. One shaft is driven through the vernier device which comprises a coupling element in which there are two sets of internal gear teeth one of which is straight and the other of which is helical. The coupling element is rotated with a hollow gear which meshes with the straight internal teeth. A driven shaft extends out of the coupling element through the hollow gear and has a gear which engages with the internal helical teeth. Shifting the coupling element axially causes it to

slide on the straight teeth and effect a torque on the helical teeth which changes the phase angle of the shaft of the top roll

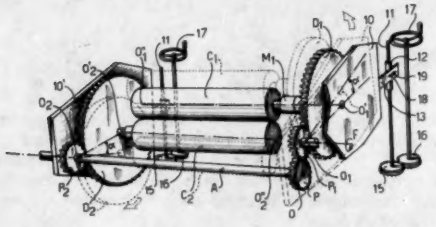


with respect to the shaft of the bottom roll and effects the desired rotational angle correction between the rolls.

3,686,919
CONTROL AND ADJUSTMENT ASSEMBLY FOR ROLLING MILL CAGES

Ugo Brusa, Via Borgnis, Domodossola, Italy

Continuation-in-part of Ser. No. 762,218, Sept. 16, 1968, abandoned. This application Dec. 21, 1970, Ser. No. 100,329
Claims priority, application Italy, Sept. 22, 1967, 53095-A/67
Int. Cl. B21b *35/00*
U.S. Cl. 72—249 **5 Claims**



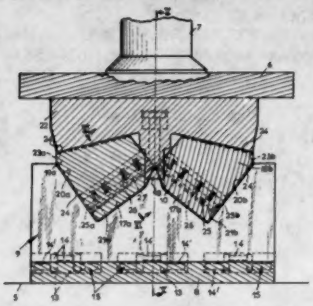
A rolling rill drive train arrangement wherein roller axes are displaceable in opposite arcuate directions and always remain in the same vertical plane. A plurality of output shafts are provided corresponding to different reduction ratios of motor speed.

3,686,920
APPARATUS FOR PRODUCING CORRUGATED DIHEDRAL BLANKS

Jean H. Alleaume, Saint-Cloud, and Gilbert C. F. Fournier, Le Havre, both of France, assignors to Technigaz, Paris, France, by said Alleaume

Filed July 17, 1969, Ser. No. 842,482
Claims priority, application France, Dec. 31, 1968, 68182929
Int. Cl. B21j *13/02*
U.S. Cl. 72—399 **14 Claims**

Apparatus for producing a dihedral element with inwardly projecting corrugations. The uncorrugated dihedral or sheet metal blank is worked by punch and die members including a pair of lateral punches, having shaping edges in a common plane at an angle to each other and provided with adjacent sunk ends; a central punch between said ends; a die of complimentary configuration together with holding and retaining

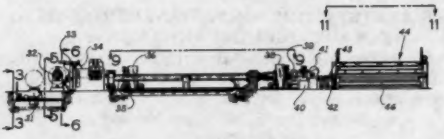


means; and means for relative synchronized and coordinate motions of the several tools.

3,686,921
METHOD AND APPARATUS FOR PROCESSING COILED SHEET METAL

Ralph E. Roper, Indianapolis, Ind., assignor to Wallace Expanding Machines, Inc., Indianapolis, Ind.

Filed March 16, 1970, Ser. No. 19,868
Int. Cl. B21d *1/05*
U.S. Cl. 72—302 **8 Claims**

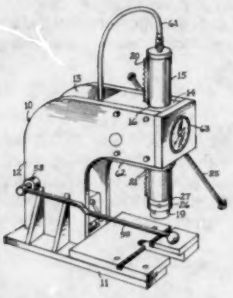


A method and apparatus for processing coiled sheets of metal. The metal is uncoiled, flattened, stretched, sheared and stacked by a continuous in line apparatus. Grippers which hold the sheet during the stretching operation open to allow the metal to pass through in a continuous sheet; thus, alleviating the necessity for transfer of the sheet to an additional processing apparatus.

3,686,922
COMBINATION MANUAL AND HYDRAULIC ARBOR PRESS

Erich Biey, 690 Greenleaf, Elk Grove Village, Ill.

Filed Oct. 23, 1970, Ser. No. 83,331
Int. Cl. B21j *9/10*
U.S. Cl. 72—441 **7 Claims**



An arbor press wherein the ram is adapted to be moved by a lever-operated pinion constantly in mesh with a rack attached to a ram carriage, with the ram continuously moved out of the

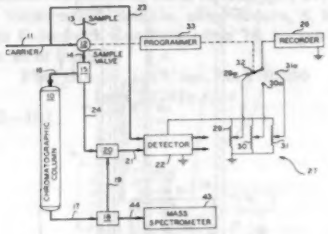
ram carriage by hydraulic pressure. In the application of the hydraulic pressure so as to move the ram out of the ram carriage, a gear-faced lock is initially moved into meshing contact with the rack on the ram carriage so as to lick the same against continuous manual movement while the ram is further moved out of the ram carriage under the force of the hydraulics.

3,686,923

TOTAL SAMPLE INDICATOR FOR CHROMATOGRAPHY

John A. Favre, Bartlesville, Okla., assignor to Phillips Petroleum Company

Filed Dec. 16, 1969, Ser. No. 885,508
Int. Cl. G01n *31/08*
U.S. Cl. 73—23.1 **10 Claims**



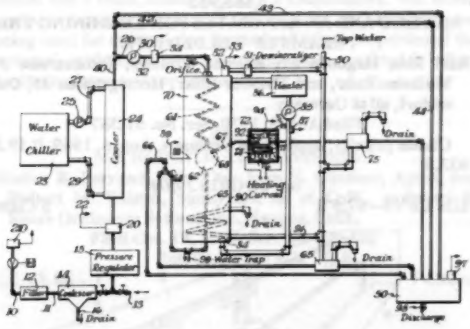
In a chromatographic analyzer, the carrier fluid stream is split at a point downstream from the sample injection. A first portion of the stream is passed through the chromatographic column in a conventional manner. The second portion of the stream is passed directly to the detector to provide an indication of the amount of sample injected.

3,686,924

CONTINUOUS V/L MEASURING

William C. Ludt, 156 Helena Ave., Yonkers, N.Y., and Edward P. Watson, Westport, Conn.

Filed Feb. 9, 1970, Ser. No. 9,561
Int. Cl. G01n *11/00, 33/22*
U.S. Cl. 73—53 **7 Claims**



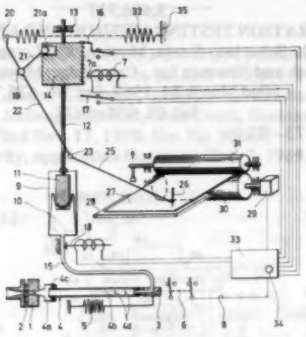
The ratio of vapor to liquid volumes produced by a volatile liquid like gasoline, is determined at selectable temperatures by moving a stream of the liquid at a precisely maintained rate and measuring flow rate evolved vapor. Such vapor flow rate gives desired ratio directly, and is preferably measured by laminar flow meter or mass flow meter or the like, to produce an output proportional to the volume rate of flow and readable as electrical signals. A series of protective safeguard devices guard against hazards and against being misled by a signal obtained while operating conditions are not proper.

3,686,925

FLUID AGGLOMERATION TESTING METHODS AND EQUIPMENT

Alfred Fleisch, Avenue des Desertes 5, 1009 Pully, and Stephan Perren, Davos-Platz, both of Switzerland, assignors to said Fleisch by said Perren

Filed Feb. 10, 1970, Ser. No. 10,221
Claims priority, application Switzerland, Feb. 14, 1969, 2245/69
Int. Cl. G01n *11/02, 33/16*
U.S. Cl. 73—61 R **8 Claims**



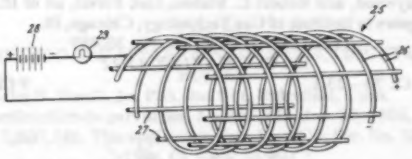
In a method and apparatus for testing fluid, in particular blood, to determine the presence of agglomerations or its tendency to form agglomerations, the fluid is passed through a filter at constant pressure and the rate at which the fluid passes the filter is measured over a given time. The apparatus includes a container having an outlet communicating with the filter and an inlet connected to a flexible-wall chamber, whose flexible wall is subjected to constant pressure by a weight. A lever mechanism connected to the weight controls movement of a stylus on a moving chart, and the lever mechanism is spring biased to compensate for the resistance to deformation of the flexible wall of the chamber.

3,686,926

CHIP DETECTING AND MONITORING DEVICE

Charles C. Miller, Springfield, and William E. Rumberger, Newtown Square, both of Pa., assignors to The Boeing Company, Seattle, Wash.

Filed April 1, 1970, Ser. No. 24,575
Int. Cl. G01n *15/06, 27/08*
U.S. Cl. 73—61 R **18 Claims**



A device for detecting conductive and non-conductive material present in fluid systems and lines, such as hydraulic, lubricating or cooling systems. The basic device is a woven mesh screen, which is cylindrical, flat or other shape, and comprises conductors of alternate polarity and non-conductors. The conductors may serve as the fill yarn while the non-conductors serve as the warp, or vice versa. Preferably, the selected weave exposes the conductors on one side, i.e., facing into the flow of fluid, with the non-conductors on the downstream side. A chip is detected when it contacts a pair of conductors of opposite polarity, thereby completing an elec-

trical circuit and energizing a signal. Provision is made for incorporating a pressure sensitive device with the screen wherein rate of buildup of both conductive and non-conductive debris on the screen will be indicated by the change in pressure differential across the screen. The device, therefore, is readily incorporated into circulating fluid systems of all types. An embodiment of the invention permits the device to perform the functions of both a filter and a detector wherein debris below a certain size is not electrically detected, but is filtered out of the system.

3,686,927

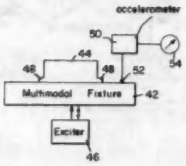
VIBRATION TESTING METHOD AND APPARATUS

Terry D. Scharton, Santa Monica, Calif., assignor to Bolt Beranek and Newman Inc., Cambridge, Mass.

Filed March 24, 1967, Ser. No. 625,774

Int. Cl. G01n *3/32*

U.S. Cl. 73—71.6 **17 Claims**



Vibration test methods and apparatus for qualifying equipment for use in aerospace vehicles. Multimodal vibration environments are produced for closely simulating in-flight vibration environments, to determine the capacity of the equipment to function in accordance with its intended purposes in operational vibration environments.

3,686,928

Patent Not Issued For This Number

3,686,929

Patent Not Issued For This Number

3,686,930

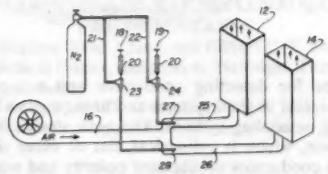
METHOD FOR MEASURING ODOR LEVEL IN NATURAL GAS

Duane V. Kniebes, La Grange; John Adrian Chisholm, Maywood, and Robert C. Stubbs, Oak Forest, all of Ill., assignors to Institute of Gas Technology, Chicago, Ill.

Filed May 7, 1970, Ser. No. 35,489

Int. Cl. G01n *31/08, 33/22*

U.S. Cl. 73—23.1 **9 Claims**



A method and apparatus which is particularly applicable to directly and objectively measure odor level in natural gas. The apparatus responds selectively to sulfur compounds in natural gas and produces an output signal proportional to the odor level of the gas, in the same manner as an "average" nose. A set of odor intensity factors developed empirically are applied to the output signal to provide a numerical value which expresses odor intensity of the gas in terms of a reference odorant compound.

3,686,931

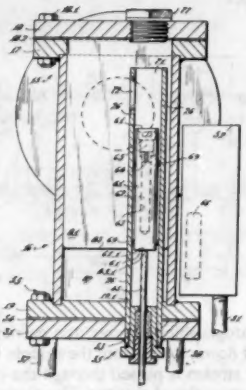
DETECTOR FOR VISCOSITY MEASURING SYSTEM

Austin S. Norcross, Newton, Mass., assignor to Norcross Corporation, Newton, Mass.

Filed Feb. 12, 1970, Ser. No. 10,799

Int. Cl. G01n *11/12*

U.S. Cl. 73—57 **22 Claims**



Viscosity measuring apparatus with relatively movable cylinder and piston for continuous detection by predetermined cycling of the movement for measuring the viscosity of fluid flowing within a duct. The apparatus uses a cylinder transversely of such duct carrying the supervised fluid and provisions are made for assuring uniform temperature distribution at the cylinder and piston, with continuous flow of the fluid. The measuring system is adapted to operate as a closed system, that is, it can be arranged to communicate with the duct but not with regions external to the duct.

3,686,932

METHOD AND AN APPARATUS FOR EXAMINING THE SEAMS OF WELDED PIPES

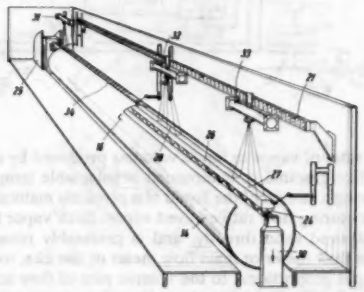
Karl Ries, Hagdorn 61; Helmut Wimmer, Jacobstrasse 39, Mulheim/Ruhr, and Theodor Biller, Herzogstrasse 35, Dusseldorf, all of Germany

Filed Aug. 5, 1970, Ser. No. 61,387

Claims priority, application Germany, Aug. 6, 1969, P 19 39 933.8

Int. Cl. G01n *29/04*

U.S. Cl. 73—67.5 R **5 Claims**



A method and an apparatus for the examination of the welding seams of welded pipes, wherein after forming the seam it is

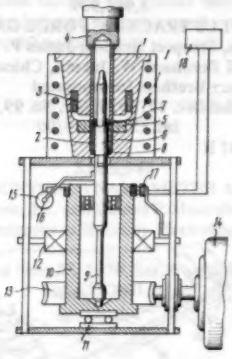
subjected to an ultrasonic examination along the entire length in production flow, certain locations of potential problems giving off distinguishing signals. Thereafter X-ray films are brought into engagement with the pipe wall at the locations resulting in such distinguishing signals, and finally an X-raying of the pipe wall is effected at these locations, said method and said apparatus being characterized by the steps or means of initially signalling to a positioning means all locations of a pipe giving off distinguishing signals during an ultrasonic pre-scan and then, at an X-ray station, placing X-ray films onto a backing at these signalled locations before the pipe is moved over said backing so that X-raying can be effected at these locations.

3,686,933

MATERIAL TESTER

Anatoly Danilovich Sokolov, ulitsa Artema, 39, kv. 69, Lvov; Nikolai Nikiforovich Danilkin, ulitsa Sedora, 5, kv.4, Tula, and Ivan Fedorovich Kanavets, ulitsa 14, korpus 1, kv. 89, Moscow, all of U.S.S.R.

Filed Oct. 28, 1969, Ser. No. 870,050
Int. Cl. G01n *3/24*
U.S. Cl. 73—101 **3 Claims**



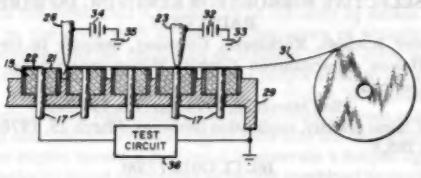
A material tester, particularly a tester for measuring the plasticity and curing speed of plastic materials, comprises a plunger mould with a device for developing pressure in the mould and a rotor, connected with a torquemeter. The mould contains cavities, filled with the material to be tested, one being used for determining the technological properties of the material, while samples are simultaneously moulded in others for their subsequent service testing.

3,686,934

MICRODETONATOR ASSEMBLY

Weston B. Farrand, Palo Alto; John N. Gardner, Aptos, and Robert M. Valenti, Sunnyvale, all of Calif., assignors to Space Ordinance Systems Inc., Saugus, Calif.

Filed Oct. 19, 1967, Ser. No. 676,557
Int. Cl. F42c *19/12*
U.S. Cl. 86—1 **7 Claims**



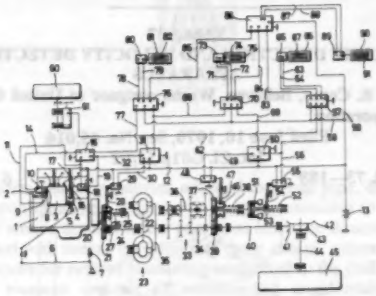
A cylindrical enclosure, or can, is formed with one end closed and the other end open. The can is partially filled with a first layer of a secondary explosive constituting an output charge, and a second layer of a primary explosive constituting a transfer charge. An explosive header is inserted into the can adjacent to the transfer charge, and the open end of the can is crimped inwardly to secure the header. The header is assembled with two concentric electrodes which are gold plated at a header face. A heater wire is positioned across the face, and is bonded to the electrodes by a first probe which presses against the wire and passes sufficient electric current to heat and soften the gold plating about the wire. Excess wire is severed by a second probe which passes sufficient electric current to melt the wire.

3,686,935

METHOD AND APPARATUS FOR MONITORING THE PERFORMANCE OF A DRAFT VEHICLE

Oswald May, Bonn, Germany, assignor to Klockner-Humboldt-Deutz Aktiengesellschaft, Koln-Deutz, Germany

Filed Nov. 17, 1970, Ser. No. 90,288
Claims priority, application Germany, Dec. 2, 1969, P 19 60 298.3
Int. Cl. G01l *3/26*
U.S. Cl. 73—112 **7 Claims**



A draft vehicle, especially for agricultural use, having an engine, preferably of the fuel injection type, and driving wheels and a transmission connecting the engine to the wheels and including a torque converter. Measuring elements measure the circumferential speed of the driving wheels, the speed of the vehicle, the speed of the engine, the rate of fuel supply to the engine, the torque supplied to the converter and the torque supplied by the converter. The thus measured values are compared to obtain values representative of the slip of the driving wheels and the efficiency of the engine and the efficiency of the converter. Indicators supplied with the obtained values are disposed within the view of the vehicle operator.

3,686,936

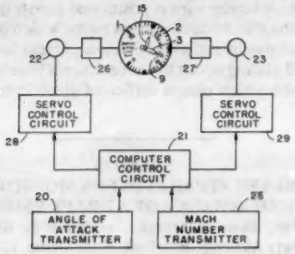
METHOD AND APPARATUS FOR DETECTING STALL BUFFET

Charles H. Daudt, Jr., P.O. Box 511, Ridgefield, Conn.

Continuation-in-part of Ser. No. 567,129, Jan. 22, 1966, Pat. No. 3,507,246. This application Feb. 11, 1970, Ser. No. 10,407
Int. Cl. G01c *23/00*
U.S. Cl. 73—180 **8 Claims**

An aircraft instrument has been designed to indicate impending stall buffet. An angle of attack indicator is provided with a dial having two scales, one displaying angles of attack and the other displaying the maximum Mach number that may be flown for each angle of attack. A Mach number indicator is associated with the Mach scale to display the aircraft's operating Mach number. Stall buffet is indicated when the values of the maximum Mach number and the operating Mach number converge on one another. Additionally, the present instrument will also indicate the maximum angle of attack that can be flown for each operating Mach number. Stall buffet will be in-

dicated when the values of the operating and maximum angle of attack converge. Separate warning means and aircraft con-



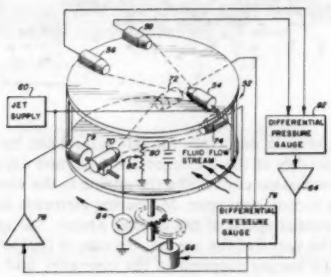
trol actuators can be provided so as to indicate impending stall buffet and to control the aircraft so as to remove it from approaching stall buffet.

3,686,937

FLUIDIC DIRECTION AND VELOCITY DETECTION APPARATUS

Victor B. Corey, Bellevue, Wash., assignor to United Control Corporation

Filed June 10, 1970, Ser. No. 45,016
Int. Cl. G01p *13/02*
U.S. Cl. 73—189 **6 Claims**



Fluidic detection apparatus for determining the direction and velocity of flow of an incident fluid flow stream. A jet stream producing means is disposed in axial spaced relation to a jet stream detector and initially disposed such that the common axis lies generally in the direction of flow of the incident fluid flow stream. Any deflection of the jet stream from its normal path, caused by the intersection therewith of the incident fluid flow stream, is detected by the jet stream detector and a servomechanism responsive thereto rotates the apparatus until the jet stream is aligned with the direction of the incident fluid flow stream. A second jet stream producing means and axially spaced jet stream detector are positioned 90° to the direction apparatus and are mounted for lateral translation by the servomechanism to detect the velocity of the same incident fluid flow stream.

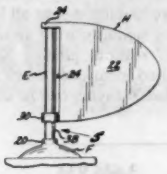
3,686,938

AUTOMOTIVE SAFETY SIDE WIND INDICATOR

Earle T. Binckley, 25055 Riverdell, El Toro, Calif.

Filed June 28, 1971, Ser. No. 157,354
Int. Cl. G01w *1/02*; B60q *9/00*
U.S. Cl. 73—189 **5 Claims**

A portable lightweight safety device formed from three parts that may be easily assembled and mounted on the hood portion of an automotive vehicle without the use of tools. The device when so mounted may be used in conjunction with the speedometer of the vehicle to determine the magnitude of the component of a side wind that is blowing in a direction normal



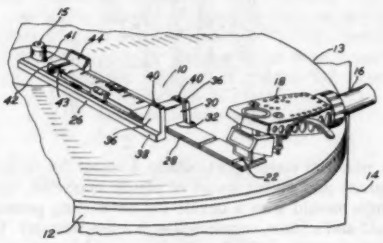
to the longitudinal sides of the vehicle, a camper body mounted on the vehicle, or a trailer drawn by the vehicle. Such information is of vital importance to the safety of a vehicle driver in certain desert areas where side winds reach a magnitude sufficient to overturn a vehicle supporting a camper and trailers drawn by a vehicle.

3,686,939

STYLUS TRACKING FORCE GAUGE

Robert J. Fuchs, Prospect Heights; James P. Thomsen, Mount Prospect, and Bernhard W. Jakobs, Chicago, all of Ill., assignors to Shure Brothers Incorporated

Filed Dec. 17, 1970, Ser. No. 99,009
Int. Cl. G01d *5/00*
U.S. Cl. 73—141 R **8 Claims**



The force gauge of this invention is adapted for use with the turntable of a phonograph. The gauge includes a base having a slotted end for receiving the spindle of the turntable. A balance beam is pivotally mounted on the base having on one end a number of grooves thereon to receive the stylus and on the other end a calibrated scale and a weight slidable along the scale. A mirror is secured to the base near the slot for reflecting the image of the balance beam end piece when it is aligned with an end piece affixed to the base.

3,686,940

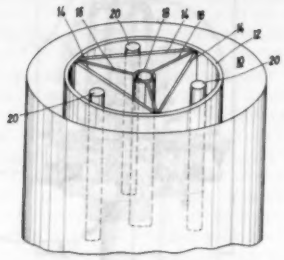
ULTRAVIOLET TESTING APPARATUS WITH SELECTIVE MIRRORS FOR REMOVING INFRARED RADIATION

Dieter Kockott, Ruckingen, Germany, assignor to Original Hawau Quarzlampen GmbH, Hohensonne-Strabe, West Germany

Filed March 22, 1971, Ser. No. 126,780
Claims priority, application Germany, March 25, 1970, P 20 14 288.5
Int. Cl. G01n *17/00*
U.S. Cl. 73—150 **5 Claims**

A water cooled tube has radial fins that extend to the surface of a surrounding cylindrical mirror that passes ultraviolet

radiation and visible light while reflecting infrared radiation. Planar mirrors that reflect ultraviolet and visible light and pass infrared are disposed between the extremities of the fins to form a polygon within the cylinder. Light sources are disposed in each area between a planar mirror and the cylindrical mir-



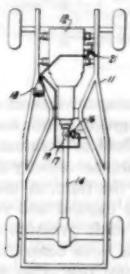
ror. Ultraviolet radiation and visible light are thus directly passed or reflected through the cylindrical mirror to an external test sample chamber, while infrared radiation is directly passed or reflected through the planar mirrors to the fins, which absorb the infrared radiation and conduct the heat therefrom to the cooling tube.

3,686,941

VEHICLE MOUNTED DYNAMOMETER AND METHOD

Joseph G. Kramasz, Jr., and Dennis P. Hanrahan, both of Concord, Calif., assignors to Kodekey Electronics Inc., Concord, Calif.

Filed Nov. 23, 1970, Ser. No. 91,890
Int. Cl. G01l 5/13
U.S. Cl. 73—117.3 **4 Claims**



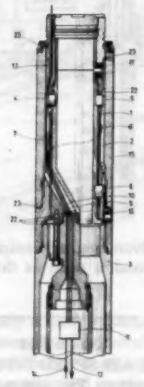
A vehicle having an engine and a rigid frame has the engine mounted to the rigid frame by compressible engine mounts. The engine rotates a drive shaft and a switch mounted adjacent the drive shaft is adapted to be actuated by means carried by the drive shaft so that the frequency of actuation is proportional to the frequency of rotation of the drive shaft. The switch supplies a velocity signal proportional to the rotation frequency of the drive shaft. A torque transducer is mounted on the rigid frame adjacent the engine mount and extends into contact with the engine such that the displacement of the engine mount is measured to generate a torque signal. The velocity signal and torque signal are combined to produce a relative horsepower signal which is displayed on an appropriate meter.

3,686,942

DRILLING COLUMN COMPRISING A DEVICE FOR MEASURING STRESSES EXERTED ON THE COLUMN

Michel Chatard, Chatou, and Remi Reynard, Montesson, both of France, assignors to Institut Francais due Petrole, des Carburants et Lubrifiants, Rueil-Malmaison (Hauts de Seine), France

Filed April 20, 1970, Ser. No. 30,086
Int. Cl. E21b 47/00
U.S. Cl. 73—151 **5 Claims**



A strain measuring device adapted to a drill pipe, comprising in combination a deformable member, sensitive to the action of strains applied to the pipe in at least one direction and provided with means for detecting these strains, connected to conductors for remote measuring associated to the drill pipe, a safety element capable of withstanding accidentally high values of these strains, and connecting means between said member and said element, adapted to permit a limited displacement of said deformable sensitive member in said direction with respect to said safety element, as a result of the application of the strains said sensitive member coming into abutment against said safety element, when the value of the strain in said direction exceeds a predetermined limit value.

3,686,943

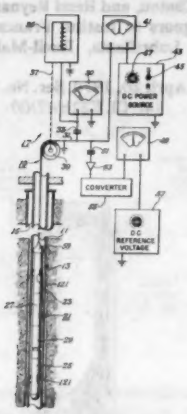
MEASURING APPARATUS FOR ATTACHING TO A CONDUIT IN A BOREHOLE

William D. Smith, Forth Worth, Tex., assignor to Go International, Inc., Fort Worth, Tex.

Filed Dec. 10, 1970, Ser. No. 96,899
Int. Cl. E21b 47/00
U.S. Cl. 73—151 **14 Claims**

Apparatus for attaching to a conduit at a depth in a borehole, as in free point indicator tools, characterized by a plurality of aspects. In a first aspect, the apparatus has individual, non-flow restricting attachment members that are operable to engage the conduit any number of times on a trip into the well with a force sufficient to bear the weight of the tool and any sinker bars and cable resting thereon. In a second aspect, the force is controlled electrically from the surface with a current limiter and a downhole electric motor is run to stall. In a third aspect, the attachment members are connected with the downhole motor via a shear pin so the pin can be sheared to release the attachment members in the event of power failure. In a fourth aspect, the downhole, or borehole tool has a sensor section with an automatic centralizer for effecting a neutral position of the two movable portions for de-

tecting small rotational or longitudinal movement therebetween. Also disclosed are specific structures and



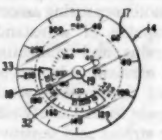
methods that are advantageously employed in measuring the depth at which a conduit such as drill pipe is stuck in the borehole.

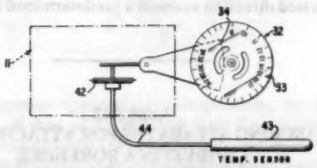
3,686,944

TRUE AIR SPEED INDICATOR

Milton Mollick, Allentown, Pa., assignor to Ametek, Inc., New York, N.Y.

Filed May 6, 1970, Ser. No. 35,210
Int. Cl. G01c *21/10*
U.S. Cl. 73—182 **6 Claims**





An air speed indicator has a pointer movable over a fixed scale to display the indicated air speed of the aircraft. A rotatable dial having a true air speed scale thereon is co-axial with the fixed dial and visible therethrough. The rotatable dial is connected through gearing and linkage to an ambient density sensor which is responsive to ambient temperature and altitude pressure. The sensor means comprises a single system including a gas filled bulb responsive to ambient temperature connected to a diaphram in the instrument case, the case being subjected to altitude pressure.

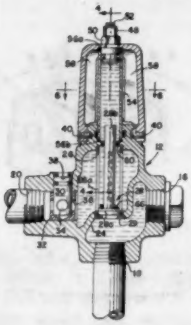
3,686,945

VENT FOR FLUID FLOW METERING DEVICE

Leonard A. Piette, Cranston, R.I., assignor to Taco, Inc., Cranston, R.I.

Filed Sept. 21, 1970, Ser. No. 74,043
Int. Cl. G01l *19/12*
U.S. Cl. 73—208 **11 Claims**

A device for metering fluid flow through a conduit, including a flow chamber registering with the conduit, a plunger movable in the flow chamber in proportion to the amount of fluid flow through the chamber for giving an indication of the



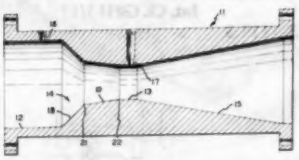
fluid flow, and a damping chamber for receiving a portion of the plunger. A plug is provided which extends into the damping chamber and is adapted to vent the damping chamber and locate the plunger in an operable position after venting.

3,686,946

FLOW METERING DEVICES OF THE PRESSURE DIFFERENTIAL PRODUCING TYPE

Dezsoe Halmi, Cranston, R.I., assignor to General Signal Corporation, Providence, R.I.

Continuation-in-part of Ser. No. 873,164, Nov. 3, 1969, abandoned.
Filed June 22, 1970, Ser. No. 48,341
Int. Cl. G01f *1/00*
U.S. Cl. 73—213 **12 Claims**



Fluid flow metering devices of the pressure differential producing type comprising a tube having a converging section which guides the fluid to a throat. The internal geometry of each tube controls the velocity distribution in the flowing stream by causing the fluid, at least once, to form a vena contracta and then expand and reattach to the tube wall before reaching a static pressure-sensing tap in the throat wall. Preferably one vena contracta is formed in the throat entrance, and at least one other vena contracta is created in the converging section. However, a single vena contracta in either location may be used. An additional vena contracta, or several vena contractas, may also be created in the flowing stream upstream of the inlet pressure-sensing tap.

3,686,947

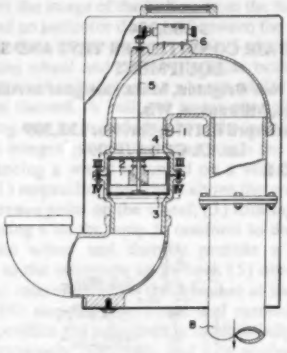
DEVICE FOR MEASURING THE QUANTITY OF LIQUID PASSING THROUGH A PIPE

Sozaburo Maeshiba, 118 Sumiyoshi, Fukuoka, Japan

Filed Nov. 21, 1969, Ser. No. 878,743
Claims priority, application Japan, March 5, 1969, 44/21914
Int. Cl. G01f *1/00*
U.S. Cl. 73—229 **2 Claims**

The present invention relates to a device for measuring the quantity of liquid passing through a pipe or the like in which

two strainers are provided in front and back of a moving vane installed in the pipe, and the end of the shaft on which said



moving vane is mounted projects out of the pipe and is connected directly or indirectly to an integrating meter.

3,686,948

TURBINE-TYPE VOLUMETRIC FLOWMETERS

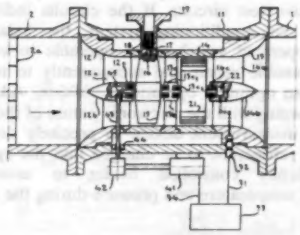
Raymond Lahaye, Clamart, France, assignor to Societe d'Instrumentation Schlumberger, Paris, France

Filed Nov. 25, 1970, Ser. No. 92,689

Claims priority, application France, Nov. 28, 1969, 6941076

Int. Cl. G01f 1/12

U.S. Cl. 73—230 **6 Claims**



This turbine-type flowmeter is intended to be used with means, known in themselves, for annuling any non-axial component of the absolute velocity of the fluid at its arrival at the measuring turbine. The flowmeter comprises a detector element for detecting the non-axial component of the absolute velocity of the fluid at its exit from the turbine, and a corrector element acting on the speed of rotation of the turbine, and actuated by the said detector by the intermediary of a servo-control device such as to annul the non-axial component of the absolute exit velocity of the fluid.

3,686,949

SAMPLING DEVICES AND POWDER DIFFUSION CONTAINERS FOR USE WITH MOLTEN METAL

Robert J. Hackett, c/o Haly Inc., Cross Rd., Brookfield, Conn.

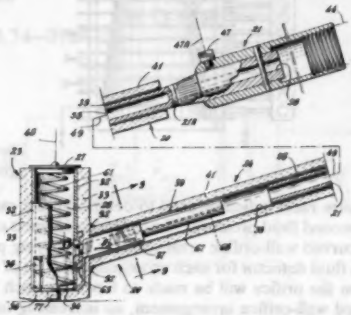
Continuation-in-part of Ser. No. 830,740, June 5, 1969, abandoned.

Filed Feb. 19, 1970, Ser. No. 12,751

Int. Cl. G01k 13/12; G01n 1/12

U.S. Cl. 73—354 **18 Claims**

Molten metal samplers adapted for convenient and speedy withdrawal of metal samples from a body of molten metal in a basic oxygen furnace, a Bessemer converter, an electric furnace or the like, these samplers being capable of producing non-porous, solidified metal samples indicating the composition of the melt and having separate sample portions of radically differing dimensions suitable for metallurgical analysis by different techniques, such as spectroscopy, microscopic analysis and the like. Means are provided for "killing" the oxygen present in the "unkilled" steel melt in a basic oxygen furnace automatically during the taking of the sample, and cooperating chill block means and vent means are provided to facilitate the chilling and solidification of adjacent portions of



the sample having radically differing diameters during and immediately following the sample-withdrawal operation.

A thin tubular paper diffusion container filled with finely powdered magnesium is positioned inside the metal sampler, and forms a highly effective "killing" means for "wild", high oxygen-content unkilled steel melts. Diffusion containers of this kind also provide an effective means of diffusing a constituent or alloying powdered material throughout a body of molten metal.

3,686,950

ADJUSTMENT OF SKI BINDINGS

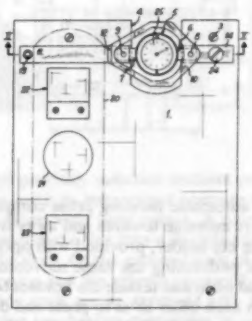
Georges Pierre Joseph Salomon, 34, Avenue de Loverchy, Annecy (Haute-Savoie), France

Filed Dec. 8, 1970, Ser. No. 96,058

Claims priority, application Switzerland, Dec. 24, 1965, 19227/69

Int. Cl. G01l 5/02

U.S. Cl. 73—379 R **5 Claims**



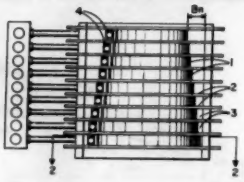
The effort required to safely release ski bindings is adjusted as a function of a measurement of the muscular strength of a skier taken in at least one direction corresponding to release of a binding. A measuring apparatus comprises a plate for rotatably supporting a ski boot and means for measuring a torsional effort supplied by the skier to tend to turn the boot.

3,686,951

DIGITAL ABSOLUTE PRESSURE RATIO INDICATOR

Apostolos P. Kizilos, Minnetonka, Minn., assignor to Honeywell Inc., Minneapolis, Minn.

Filed Sept. 2, 1970, Ser. No. 68,912
Int. Cl. G01l 7/00
U.S. Cl. 73—388 R 4 Claims



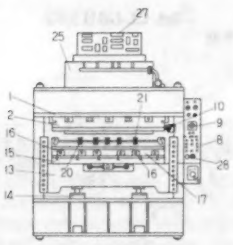
A pressure ratio indicator used to determine the ratio of a first and second fluid pressure. The indicator consists of a plurality of curved wall-orifice arrangements of varying parameters and a fluid detector for each arrangement. A jet of fluid issuing from the orifice will be made to have, for each successive curved wall-orifice arrangement, an increasing tendency to detach from the wall. The attachment of the jet to the wall will be detected by a first set of detectors and will not be detected by a second set of detectors since separation has occurred prior to reaching these detectors, so that the pressure ratio is determined to be a value greater than that necessary to cause flow to exist at the first set of fluid detectors which are detecting flow, but less than the value necessary to cause flow to exist at the second set of fluid detectors which are not detecting flow.

3,686,952

UNIVERSAL AUTOMATIC BENDING PRESS

Takeo Hitosugi, N. 1-20-7, Taihei-cho, Sumida-ku, Tokyo, Japan

Filed June 17, 1970, Ser. No. 46,905
Int. Cl. B21d 41/00
U.S. Cl. 72—396 1 Claim



A universal automatic bending press comprising a pair of male die holders movable towards and away from each other, a pair of female die holder, provided with operating cylinders and capable of performing the same movement as said male die holders, said male and female die holders being adapted to cooperate with each other so as to press and deform the work therebetween to the desired shape, a vertically movable table provided with a bolster having mounted thereon said female die holders, and an unloader having suction means movable into the machine frame upon completion of the bending operation for delivery of the bent pieces from said machine frame, the working components above depicted being adapted for cooperating with each other automatically for performing the bending operation.

3,686,953

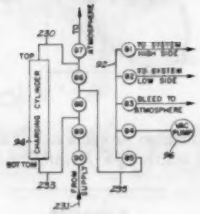
Patent Not Issued For This Number

3,686,954

AUTOMOBILE AIR CONDITIONER TEST AND SERVICE EQUIPMENT

Daniel M. Motl, New Brighton, Minn., assignor to Allied Power Industries, Inc., Milwaukee, Wis.

Filed April 8, 1971, Ser. No. 132,309
Int. Cl. G01m 19/00
U.S. Cl. 73—432 R 11 Claims



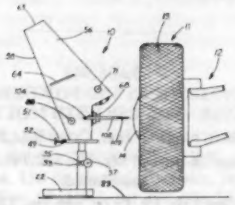
Electronically automated equipment utilized for diagnostic evaluation and repair of automobile air conditioning systems. Test connections provide sensors to measure the various pressures and temperatures in the operating system which are selectively connected to appropriate readout devices. Various hand actuated switches are provided to sequentially actuate the respective test circuits. If the circuits indicate a fault within the air conditioning system, the balance of the manually operated switches are operable to evacuate the system to enable repair and subsequently to recharge the system to an optimum operating condition. Additional features, in keeping with the electronic nature of the system, are capacitive measurement device to precisely determine the amount of refrigerant to be charged into the system, and a thermostatically controlled heater to assure suitable refrigerant temperature and pressure during the charging cycle.

3,686,955

OPTICAL WHEEL BALANCER

Louis L. Butler, 2731 28th Ave., Rock Island, Ill.

Filed April 2, 1970, Ser. No. 25,000
Int. Cl. G01m 1/28
U.S. Cl. 73—457 10 Claims



An apparatus for balancing a wheel mounted on a vehicle by visually observing its off-center movements upon rotation thereof. The apparatus includes an indicia applied to the

wheel, a base supporting a housing, a variable strobe lamp connected to the housing and directed toward the indicia, an optical unit enclosed within the housing, the unit including a first lens focused upon the indicia and a second lens adapted to transmit the image of the indicia from the first lens to an observer, and an indicator disposed between the first and second lenses to relate to the observer the off-center movements of the rotating wheel and thereby indicate both the amount of weight required to balance the wheel and the location for the placement thereof. A bail and stylus pivotally connected to the housing may be included to form the indicia on the wheel.

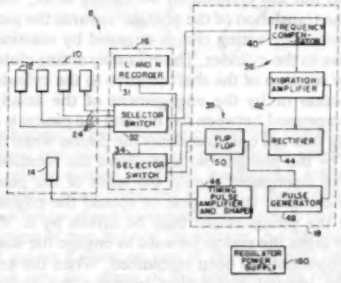
Also an integral part of the invention is the method of optically balancing a wheel mounted on a vehicle including the steps of (1) suspending the wheel above the ground; (2) marking a reference point on the wheel; (3) rotating the wheel, (4) synchronizing a strobe lamp to conform to the speed of rotation of the wheel and thereby provide a motionless appearance to the reference and wheel; (5) observing the position of the reference when the wheel is at its lowest vertical position; (6) stopping the wheel and manually rotating the wheel to position the reference in substantially the same location as previously observed; and (7) applying appropriate counter-weights to the wheel.

3,686,956

STRUCTURE FOR CONTINUOUS MONITORING OF SHAFT VIBRATION MAGNITUDE AND PHASE ANGLE

Lawrence J. Simpkin, Dearborn Heights, and Richard M. Srodawa, Detroit, Mich., assignors to The Detroit Edison Company, Detroit, Mich.

Filed Aug. 10, 1970, Ser. No. 62,431
Int. Cl. G01m 1/22
U.S. Cl. 73—462 **7 Claims**



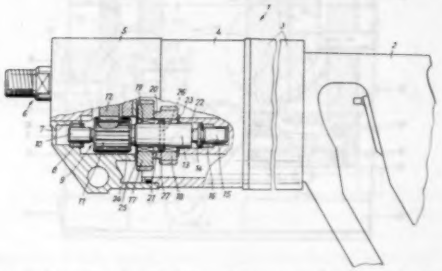
Structure for and method of continuously monitoring and recording the magnitude and phase angle of vibration of a rotary shaft is disclosed. The structure includes means for integrating a vibration proportional, velocity signal to provide a sinusoidal signal having an amplitude magnitude proportional to vibration magnitude and means for rectifying and integrating the sinusoidal signal to provide a direct current signal proportional to the magnitude of vibration, structure for shaping the sinusoidal signal and subsequently differentiating it to provide relatively sharp electrical signals representing a particular angular position of vibration magnitude measurement which sharp signals are operable together with other relatively sharp electrical signals representing a predetermined angular zero position on the rotating shaft obtained from a pickup probe mechanically associated with the shaft and timing pulse amplifying and shaping structure, to set and reset a multivibrator and means for integrating the output of the multivibrator to provide a direct current signal proportional to the relative phase angle of the vibration magnitude recorded. A zero adjust structure and method is provided for both of the vibration magnitude and phase angle monitoring and recording means.

3,686,957

CHANGE SPEED TRANSMISSION WITH SHIFTABLE SHAFT

Manfred Kirn, Stuttgart-Moehringen; Alfred Hettich, Stuttgart-Echterdingen; Reinhard Hahner, Stuttgart; Reinhold Stroezel, Leinfelden, and Max Burklin, Waldenbuch, all of Germany, assignors to Robert Bosch GmbH, Stuttgart, Germany

Filed Nov. 6, 1970, Ser. No. 87,458
Claims priority, application Germany, Nov. 14, 1969, P 19 57 234.0
Int. Cl. F16h 3/08
U.S. Cl. 74—371 **8 Claims**



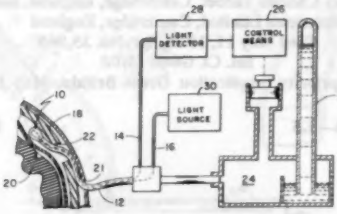
The change speed transmission of a portable tool has a shaft carrying in radial or diametrical bores, spring-loaded coupling balls which, in two axially shifted positions of the shaft, project into inner recesses of one or the other of two drive gears rotating at different speeds on the shaft. The speed of the shaft can be selected by manually shifting the shaft in axial direction.

3,686,958

FIBER OPTIC PRESSURE DETECTOR

John H. Porter, Cochester Point, and David B. Murray, Fairfax, both of Vt., assignors to Ladd Research Industries, Inc., Burlington, Vt.

Filed Feb. 22, 1971, Ser. No. 117,448
Int. Cl. A61b 5/00; G01l 7/08; G02b 5/14
U.S. Cl. 73—406 **8 Claims**



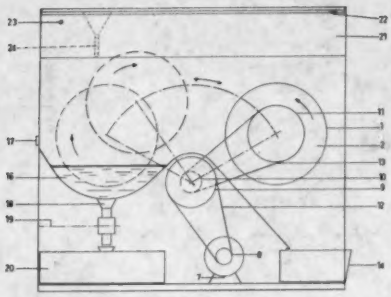
A sensor unit precisely monitors ambient pressure within a confined space, such as intracranial pressure of a human patient, utilizing fiber optic light guides. A pair of light guides pass within a pneumatic line into a flexible envelope which is implanted in the skull. Of the external ends of the guides, one faces a light source and the other a photocell. Within the envelope the guide ends are so arranged with respect to light beam modulating mechanism responsive to envelope distortion due to change in relative pressure that a well-defined light beam passing between the ends is either "on" or "off." The condition of the beam is sensed by the photo-cell which in turn operates pneumatic controls acting through the pneumatic line correspondingly to adjust repeatedly the internal pressure in the envelope so that it continuously spans the ambient pressure, thus providing a measure thereof.

3,686,959

METHOD AND APPARATUS FOR DETERMINING THE RELATIVE PROPORTIONS BY WEIGHT OF ASPHALT COMPONENTS

Kornelis Kruiger, Harde, Netherlands, assignor to N.V. Offringa, Harde, Netherlands

Filed Feb. 9, 1971, Ser. No. 113,943
Claims priority, application Netherlands, Feb. 26, 1970, 7002729
Int. Cl. G01n 15/00
U.S. Cl. 73—432 R 2 Claims



A method and an apparatus to determine the relative proportions by weight of the components of an asphalt sample, in which successively the sample is weighed, the gravel with mortar and bitumen adhering thereto is separated from said sample, said dirty gravel is washed, a small part of the rest of the sample is treated to separate the bitumen therefrom and both the bitumenless rest of said sample part and the washed gravel are weighed.

ERRATUM

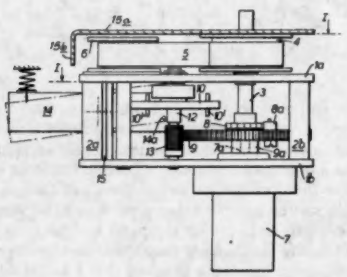
For Class 74—371 see:
Patent No. 3,686,956

3,686,960

STEPPING DEVICE FOR ROTATING THE TABLE OF A SAMPLE CHANGING EQUIPMENT

Cecil Sidney Charles Tarbet, Cambridge, England, assignor to Cecil Instruments Limited, Cambridge, England

Filed May 11, 1970, Ser. No. 35,969
Int. Cl. G04b 15/08
Claims priority, application Great Britain, May 12, 1969, 24029/69
U.S. Cl. 74—1.5 8 Claims



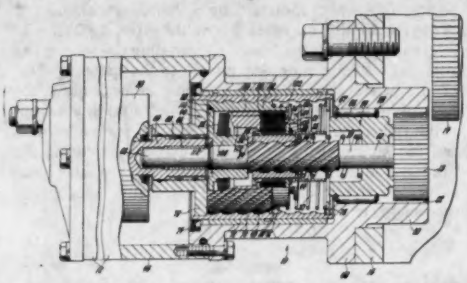
A stepping device for a sample changer turntable is driven by spring means, which may be tensioned by rotation of the turntable, and suitably coupled fluid damper means controls the stepped rotation of the turntable. A stepping escapement for the device may comprise a disk carrying pins which project on both sides thereof and a lever carrying co-operating posts.

3,686,961

STARTING MECHANISM

Robert W. Campbell, Anderson, Ind., assignor to General Motors Corporation, Detroit, Mich.

Filed May 17, 1971, Ser. No. 143,932
Int. Cl. F02n 11/02
U.S. Cl. 74—7 R 9 Claims



The housing of a starting motor rotatably mounts a cylinder having internal splines of one pitch. A shaft having external splines of a different pitch is rotatably and translatably supported by both the cylinder and housing and is connected at one end to a pinion engageable with the starter gear of an engine. Supported by the splines on the cylinder and the shaft are respectively a plunger and a nut that are advanced towards the pinion end of the shaft by the coaction of the cylinder and shaft with their respective different sets of splines. The plunger and nut are coupled by an axially acting clutch engaged by the translation of the plunger towards the pinion end and by a rotatably acting clutch engaged by rotation of the shaft relative to the cylinder. The rotatably acting clutch is disengaged by rotation of the shaft relative to the cylinder in the other direction or by the engagement of the axially acting clutch. Compressed between the nut and the pinion is a helical jump spring that not only translates the pinion when the nut is translated by the plunger but also allows the rotatably acting clutch to be disengaged should the teeth of the pinion abut those of the engine starter gear or should the engine starter gear drive the pinion rather than be driven by it. The jump spring also urges the pinion forward to engage the starter gear after the abutment has been eliminated. When the engine has started, the inertial interaction between the cylinder and plunger and a preload on the rotatably acting clutch retracts the plunger to engage another axially acting clutch that in turn retracts the pinion from engagement with the starter gear.

3,686,962

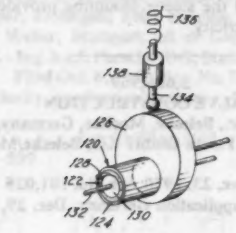
SPEED REDUCER AND MOTION TRANSLATOR

Warren T. Sommer, 601 Orleans, Detroit, Mich.

Filed Oct. 5, 1970, Ser. No. 77,830
Int. Cl. F16h 21/16
U.S. Cl. 74—25 13 Claims

This disclosure relates to a power transmitting device which serves as a special application speed reducer and may be utilized as a motion translator, converting rotary to linear motion for example. The device includes a movable driven member, a bearing member having a surface generally parallel to a surface of the driven member and adapted to move in unison therewith, and a generally cylindrical drive member disposed between the parallel surfaces of the bearing and driven members and in bearing contact therewith. In the disclosed device, the coefficient of friction of the members are chosen such that the drive means frictionally grips the driven member and slips against the bearing member to cause the members to move in

unison. Where the surfaces are generally flat, for example, the rotational movement of the drive means is converted to linear



movement, however relatively complex motions are also easily produced by the disclosed device.

3,686,963

MOTION CONVERTER

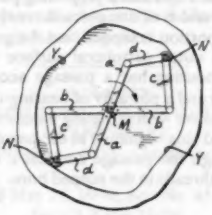
Prabhakar Ramchandra Phatak, Janaki, 1205/4/2, Shivaji Nagar, Poona, 4, India

Filed Nov. 16, 1970, Ser. No. 89,812

Claims priority, application Great Britain, Dec. 12, 1969, 60867/69

Int. Cl. F16h *21/12*

U.S. Cl. 74—63 **13 Claims**



A mechanism is provided for converting one rotary motion into at least one concentric and periodically-varying or intermittent rotary motion, and the mechanism comprises four links pivotably interconnected to form a quadrilateral linkage which can rotate about an axis passing through one of the links or a junction of two links of the linkage. A cam surrounds the axis and guides a point on one of the remaining links so as to guide and vary the shape of the linkage in its rotation about the axis, such guided linkage in rotation has relatively different and varying angular velocities about the axis at different points on the linkage. Such points provide periodic and relatively varying angular velocities to an output mechanism guided at such points. Variation of the angular velocities is controlled by the proportions of the lingage and the configuration and position of the cam.

3,686,964

TOOL HOLDERS WITH CONTROLLED TOOL MOVEMENT

Christian Thibaut, and Andre Ballini, both of Billancourt, France, assignors to Regie Nationale des Usines Renault, Billancourt (Hauts de Seine), France

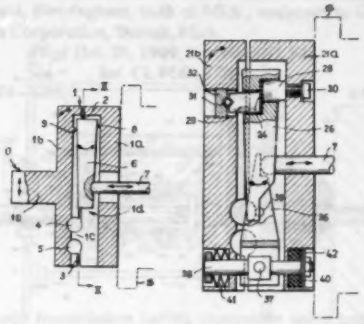
Filed April 13, 1970, Ser. No. 27,804

Claims priority, application France, April 21, 1969, 6912443

Int. Cl. F16h *27/04*

U.S. Cl. 74—110 **7 Claims**

A control system for a tool holder which is attached to one of a pair of elements which are hinged together at one end and are normally urged toward each other at the other end. A control member such as a push rod extends through a hole in the other of the elements and actuates a lever in a chamber between the two elements. The end of the lever away from the control member is held between two relatively closely spaced fulcrum points on the two elements so that a given movement of the control member results in a substantially reduced corresponding arcuate movement being transmitted to the element carrying the tool holder. Preferably the lever has a pair of opposite blind passages having partially overlapping cross-sectional contours with a wafer of resilient plastic material interposed in the bottoms of these passages, and with bearing studs connected to the two elements being received in the passages and engaging on opposite sides of the wafer.



3,686,965

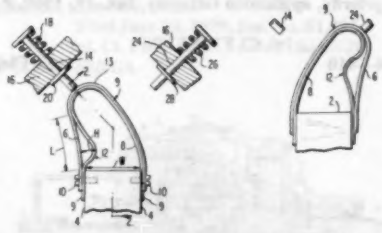
SNAP ACTION APPARATUS

Donald F. Wilkes, Albuquerque, N. Mex., assignor to Rolamite, Incorporated, San Francisco, Calif.

Filed April 29, 1970, Ser. No. 32,885

Int. Cl. F16h *21/44*

U.S. Cl. 74—100 **9 Claims**

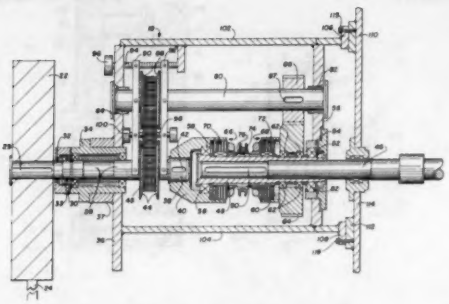


A pair of thin flexible bands are arranged in a loop with one band being on the inside of the loop and the other band being on the outside of the loop. The inner band is resiliently flexed in a lobe arching away from the outer band, and the bands are secured together adjacent the ends of the loop. The bending moments in the inner band normally urge the lobe to progress toward one end of the loop. By changing the curvature of the loop, the bending moments in the inner band are changed and the lobe snaps over to the opposite side of the loop.

3,686,966

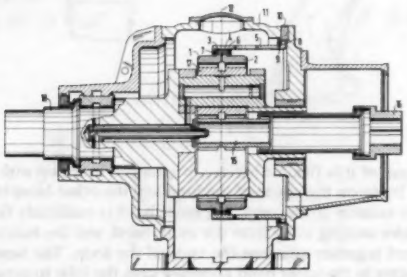
Patent Not Issued For This Number

3,686,967
PLURAL SPEED TRANSMISSION SYSTEM
Jene Arnold Beneke, Dallas, Tex., assignor to Verson Manufacturing Company, Dallas, Tex.
Division of Ser. No. 773,140, Nov. 4, 1968, Pat. No. 3,561,279. This application Oct. 6, 1970, Ser. No. 78,597
Int. Cl. F16h 35/00, 35/06, 55/22
U.S. Cl. 74—388 R 3 Claims



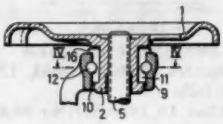
The plural speed mechanical transmission system includes a driving shaft rotated at a first speed by a flywheel and a driven shaft coaxially lined with the driving shaft. Clutches having two energized states are disposed adjacent the ends of the shafts, with the clutches operable in a first state to connect ends of the shafts for rotation of the driven shaft at the first speed. An idler gear is disposed parallel to the driven shaft and is operable to transmit motion from the driving shaft to rotate the driven shaft at a second different speed when the clutches are in a second state. Structure is connected between the idler gear and one of the shafts for allowing selective variance of the magnitude of the second speed.

3,686,968
PLANETARY GEARING WITH HERRINGBONE TEETH
Klaus Ehrlenspiel, In Tannach 606, and Horst Strinzel, Bergstrasse 5, both of 8972 Sonthofen, Germany
Filed Dec. 18, 1970, Ser. No. 99,425
Claims priority, application Germany, Dec. 19, 1969, P 19 63 831.4
Int. Cl. F16h 57/00
U.S. Cl. 74—410 5 Claims



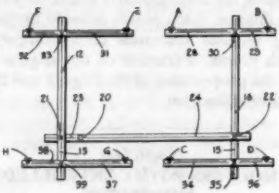
Planetary gearing with internal balancing and self-compensation for eccentricity. Mounting means for a planetary gear group are provided which effects automatic internal balancing thereof and provides for self-compensation for eccentricity. The planetary group is mounted through angularly aligned, oppositely directed, teeth at a first selected point on a mounting sleeve. Said mounting sleeve is itself supported at a point spaced axially from said first point. The angularly arranged but oppositely directed teeth of the first mentioned mounting effects internal balance of the planetary group to prevent axial shifting thereof and the sleeve mounting provides self-compensation for eccentricity.

3,686,969
VALVE CONSTRUCTION
Walter Siepmann, Sr., Belecke, Moehne, Germany, assignor to Stahl-Armaturen Persta GmbH KG, Belecke/Moehne, Germany
Filed Dec. 23, 1970, Ser. No. 101,025
Claims priority, application Germany, Dec. 29, 1969, P 19 65 250.7
Int. Cl. F16h 1/10
U.S. Cl. 74—424.8 VA 9 Claims



A handwheel has a hub and a projecting portion extends axially from the hub and is of one piece therewith. An axial bore in the projecting portion is tapped and the projecting portion is provided in its outer peripheral surface with an annular groove. A valve-housing has a passage accommodating the projecting portion and a plurality of bearing-ring segments are confined in the groove with retaining means retaining the projecting portion and ring segments in the passage. A valve spindle extends through the passage and has a threaded portion meshing with the threads in the tapped bore.

3,686,970
DIGITAL CONTROL DEVICES WITH MECHANICAL CONVERSION
Edward Bozoyan, 1812 West St., Union City, N.J.
Filed July 27, 1970, Ser. No. 58,500
Int. Cl. G05g 1/00
U.S. Cl. 74—479 13 Claims



A digital actuator comprising a combination of small lever arms in conjunction with a series of on/off torque motors constructed and arranged to reduce the stroke ratings of motors to binary-weighted displacements and add them up to one another; a hydraulically controlled modified sliding spool valve having a shift arm and a positional bellows at each end; a control pressure bellows to receive the total of binary-weighted displacements and proportionally shift the spool by means of one of its shift arms via either positioner bellows.

3,686,971

COMPOUND CRANKSHAFT WITH A DRIVE-GEAR WHEEL FOR MULTI-CYLINDER PISTON ENGINES, ESPECIALLY INTERNAL COMBUSTION ENGINES

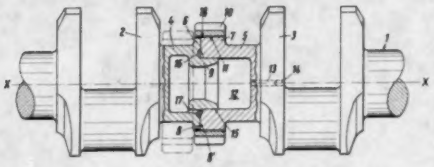
Erich Strehler, Esslingen; Fritz Kaumle, Leonberg-Eltingen, and Rolf Weber, Stuttgart, all of Germany, assignors to Firma Dr. - Ing. h.c.f. Porsche K-G, Stuttgart, Germany

Filed Oct. 6, 1970, Ser. No. 78,374

Claims priority, application Germany, Oct. 10, 1969, P 19 51 097.5

Int. Cl. F16c 3/10

U.S. Cl. 74—597 24 Claims



Compound crankshaft with a driving-gear wheel for multi-cylinder piston engines, especially internal combustion engines, which crankshaft is split perpendicularly in the area of the crankshaft journals and fitted together under the formation of an expansion joint formed by a pressed fit and welded butt joint. The perpendicularly split crankshaft in the plane of the journals are electron-ray welded together at the expansion joint of adjacent journals. A ventable hollow space is formed between the journals joined together.

3,686,972

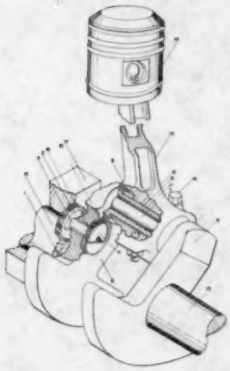
INTERNAL COMBUSTION ENGINE VARIABLE THROW CRANKSHAFT

Edward M. McWhorter, 6931 Greenbrook Circle, Citrus Heights, Calif.

Filed May 28, 1970, Ser. No. 41,298

Int. Cl. F16h 21/30

U.S. Cl. 74—602 2 Claims



A crankshaft for an internal combustion engine comprising a plurality of crank throws whose crank radii are made to vary throughout the crankshaft revolution. The crankshaft and varying radii crank throws are interconnected by four gears which rotate an eccentric which is placed between the connecting rod and crankpin. Rotation of the eccentric may be clock-wise or counterclockwise depending on the arrangement of gears used to generate either epicycloidal or hypocycloidal motion in which the cuspated motion is attenuated by incorporating a pair of non-circular gears which also rotate the eccentric upon the crankpin in a manner which causes the piston to move in the cylinder to a precalculated position during the combustion independent of the uniform speed of the crankpin.

3,686,973

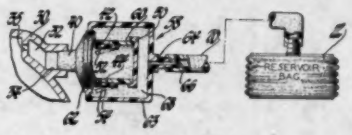
METHOD AND APPARATUS FOR CONTROL OF TRANSMISSION BREATHING

Ellard D. Davison, Jr., Grosse Pointe Farms, and Merrill L. Haviland, Birmingham, both of Mich., assignors to General Motors Corporation, Detroit, Mich.

Filed Oct. 20, 1969, Ser. No. 867,546

Int. Cl. F16h 57/04

U.S. Cl. 74—606 8 Claims



Automatic transmission having suppressor valve construction which restricts transmission breathing to reduce oxidation of the lubricant fill. In one form there are flap valves which open and close under predetermined pressure conditions within the transmission to restrict the intake and exhaust of air or optionally of a gas, such as nitrogen, in a sealed system. In another form the suppressor valve has an elastic sleeve valve member which controls a breather passage by opening to allow the exhaust of air from the transmission and by closing to block air from entering the transmission. In another form the valve has a knife edge slit that is normally closed but which opens to permit the intake and exhaust of air under predetermined pressure conditions within the transmission. In another form of the invention there is a spring which holds a valve element on a valve seat to prevent intake of gas into the transmission through the valve but allows the gas to flow out of the transmission only under particular pressure conditions within the transmission.

3,686,974

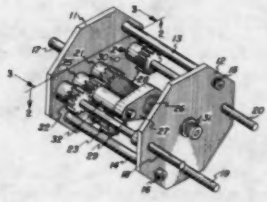
MECHANICAL DRIVE ARRANGEMENT

William S. Little, Jr., Rochester, N.Y., assignor to Xerox Corporation, Stamford, Conn.

Filed June 30, 1970, Ser. No. 51,086

Int. Cl. F16h 37/06, 3/34; F16d 43/20

U.S. Cl. 74—665 GA 6 Claims



A mechanical drive arrangement having a plurality of output drive members which may be selectively driven from a single input drive member.

3,686,975

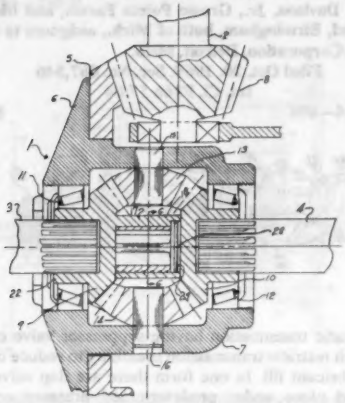
Patent Not Issued For This Number

3,686,976

HYDRAULIC LIMITED SLIP AND STABILIZING DIFFERENTIAL GEARING UNIT

Eugene O. Philippi, 1331 E. Northlake Ave., Appleton, Wis.

Filed July 10, 1970, Ser. No. 53,849
Int. Cl. F16h 1/44; F16d 31/04
U.S. Cl. 74—711 5 Claims



A cup-shaped housing is integrally formed with the inner face of a wheel axle side gear of a differential gearing and projects forwardly into abutting engagement with the opposed face of the opposite wheel side gear. An eccentric opening with the axis offset with respect to the wheel axis is provided in the housing with a stator mounted therein and having an inner five-point star-configured stator opening. A four-lobed rotor within the stator opening is integrally formed with the second side gear and meshes with the stator opening. An outer o-ring sealing flange on the rotor mates with a corresponding circular housing recess to seal the stator chamber which is filled with an hydraulic transmission oil. The stator and rotor cooperate to establish a hydraulic interlock permitting normal straightaway and turning of the vehicle. If the drive shaft torque tends to transfer to one wheel, restricted movement of the oil creates a hydraulic loading to distribute torque to both wheels.

3,686,977

Patent Not Issued For This Number

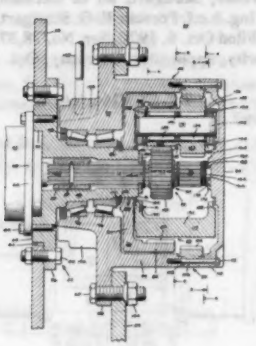
3,686,978

PLANTETARY REDUCTION WHEEL HUB

John C. Knoblach, and Ray M. Shepard, both of Fort Wayne, Ind., assignors to Fairfied Manufacturing Company, Inc., Lafayette, Ind.

Filed April 9, 1971, Ser. No. 132,707
Int. Cl. F16h 1/28, 3/44
U.S. Cl. 74—801 20 Claims

A planetary reduction drive, particularly for a vehicle wheel. A mounting flange adapted to be secured to the vehicle frame has a hollow spindle extending from one side, and a drive motor is mounted on the other side of the flange with its output shaft extending into the spindle. An input shaft is coupled to the motor shaft and extends outwardly from the spindle. A fixed ring gear surrounds the input shaft and is secured to the spindle adjacent its outer end. A housing has a first hub portion surrounding and rotatably mounted on the spindle and a second hub portion surrounding the fixed ring gear, the wheel being mounted on the housing. An output ring gear also surround the input shaft and is secured to the second hub portion of the housing. A planet carrier is positioned within the ring gears and supports at least two planet shafts, each of the planet shafts having a cluster of first and second planet gears thereon, the first planet gears meshing with the fixed ring gear and the second planet gears meshing with the output ring gear.



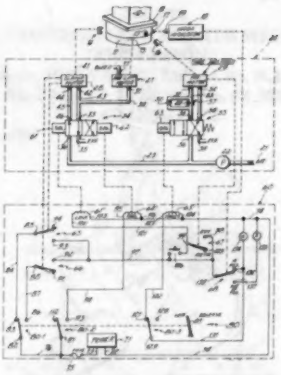
The mesh of the planet gears with the ring gears comprises the sole support for the carrier. A sun gear is splined to the input shaft and meshes with one planet gear of each cluster.

3,686,979

INDEX TABLE CONTROL

William Edward Petri, Jr., and Richard Joseph Froese, both of Cincinnati, Ohio, assignors to The Cincinnati Gilbert Machine Tool Company, Cincinnati, Ohio

Filed Dec. 7, 1970, Ser. No. 95,848
Int. Cl. B23q 21/00
U.S. Cl. 74—813 C 40 Claims



An air bearing supported rotary index table for machine tools is provided with an automatic table index locking mechanism which is operable to allow the table to be moved past undesired index positions and to be stopped and locked at a desired index position. The locking mechanism is provided with time delay controls which actuate it only in response to the presence of the table at a given index position for a predetermined minimum period of time. In use, discrimination between desired and undesired index positions is achieved by movement past undesired index positions, and very slow movement near the desired index position.

3,686,980

APPARATUS FOR ATTACHING BACKING TO A DIE

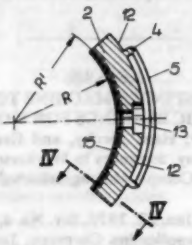
Guenter Heyden, Neuwied, Germany, assignor to Winkler & Duennebier, Neuwied am Rhine, Germany

Filed Sept. 23, 1970, Ser. No. 74,575

Claims priority, application Germany, Sept. 25, 1969, P 19 48 506.4

Int. Cl. B21c *5/20*

U.S. Cl. 76—4 **3 Claims**



Profiled internal and/or external cuts, particularly window openings in blanks of envelopes or the like are provided in moving blanks or webs of paper and the like by a rotary punching die the cutting edges of which are shaped as an enveloped cylinder and/or a rotary mating segment cooperating with the die to support the blanks or webs during the cutting. The invention is particularly characterized by the provision of a layer of curable synthetic resin firmly fixed to the underside of the punching die or of the mating segment.

3,686,981

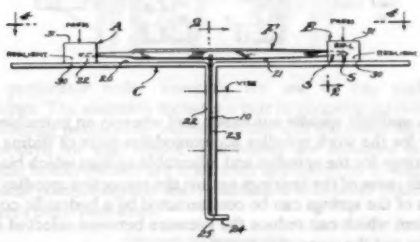
SAW FILING APPARATUS

Christian N. Gerber, 1428 Cheswick Place, Westlake Village, Calif.

Filed May 5, 1971, Ser. No. 140,494

Int. Cl. B23d *63/08*

U.S. Cl. 76—36 **10 Claims**



Apparatus for guiding and controlling manual sharpening of saw teeth and comprised of a guide block to which a file is mounted for correct rotative positioning and of a surface plate clamp in which the saw to be sharpened is held with the teeth thereof exposed; said grip block being depressable so as to control limited cutting of the file into the saw teeth upon the application of downward pressure while forcibly moving the file forwardly along guides in the surface plate clamp; and said file being reversibly mounted to said guide block for cutting teeth set out at opposite sides of the saw.

3,686,982

CABLE STRIPPING TOOL

Victor Edward Bull, 28 Union St., Northcote, Victoria, Australia

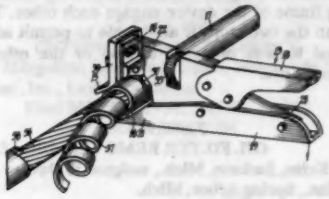
Filed Feb. 18, 1970, Ser. No. 12,419

Claims priority, application Australia, Feb. 18, 1969, 50,637/69

Int. Cl. H02g *1/12*

U.S. Cl. 81—9.5 R **7 Claims**

A cable stripping tool comprising clamp means having a pair of jaws adapted to close onto a cable for permitting stripping of the sheathing from the cable. A cutter element is mounted on one of the clamp jaws and is positioned to penetrate the sheathing upon closure of the jaws. The cutter causes a helical strip to be severed from the cable sheathing by rotating the clamp means around the cable. The cutter element preferably lies in a general plane which is longitudinal to but slightly offset from the central axis of the cable. The general plane of the blade is preferably slightly inclined at a small angle to the cable axis.



3,686,983

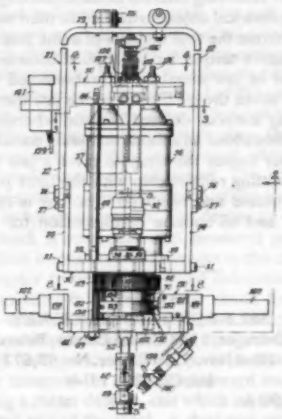
TORQUE APPLYING AND TENSION CONTROLLING DEVICE

Andrew Flagge, Aurora, Ill., assignor to Thor Power Tool Company, Aurora, Ill.

Filed July 20, 1970, Ser. No. 56,402

Int. Cl. B25b

U.S. Cl. 81—52.4 **19 Claims**



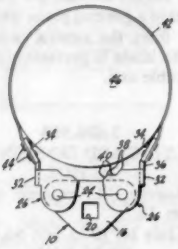
A torque transmitting and controlling device is disclosed, wherein at least one fluid motor having a low stall torque is connected to one end of a shaft and is adapted to apply a predetermined low torque to one of a pair of threaded members connected to the other end of the shaft. At least one other fluid motor is connected to the shaft through an overrunning clutch so that the first motor is prevented from driving the second fluid motor during the low torque applying operation. When fluid under pressure is supplied thereto, the second fluid motor rotates the shaft an additional number of degrees to develop a desired tension in one or the other of the threaded members. A cam carried by one of the rotatable parts of the device actuates a valve in the fluid circuit of the device to shut off the flow of fluid to the second fluid motor after the shaft has rotated the additional number of degrees. At the completion of the torquing and tensioning operation, the device automatically applies a mark to structure adjacent

the threaded members to indicate that the members have been tensioned. During or after disengagement of the device from the threaded members, an automatically or manually actuated valve in the fluid circuit of the device causes the first fluid motor or a separate fluid motor to rotate the shaft in a direction opposite from the direction of rotation thereof during the torquing operation until a pair of stops respectively carried by one of the parts of the overrunning clutch and the supporting frame of the device engage each other. The spacing between the two stops is adjustable to permit adjustment of the final tension obtained in one or the other of the threaded members.

3,686,984
OIL FILTER REMOVER

Robert E. Kelso, Jackson, Mich., assignor to Dowley Manufacturing, Inc., Spring Arbor, Mich.

Filed Dec. 3, 1970, Ser. No. 94,783
Int. Cl. B25b *13/52*
U.S. Cl. 81—64 **4 Claims**

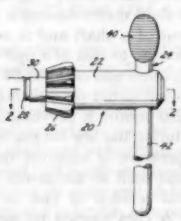


A device for removing internal combustion engine oil filters and similar cylindrical objects attached to their support means by threads wherein the tool consists of a link member adapted to have a rotative torque forced applied thereto, the link including a pair of jaw members interconnected by a flexible strap passing about the oil filter, and the jaw members having filter engaging surfaces defined thereon wherein rotation of the link member about an axis substantially parallel to the axis of the oil filter causes the strap to pivot a jaw member into torque transmitting relationship with the filter permitting the filter to be rotated and removed. The roll is inexpensive in construction and of concise configuration for use in close quarters.

3,686,985
SELF-EJECTING CHUCK KEY

Seymour A. Ostrager, 1188 Grand Course, Bronx, N.Y.

Filed Nov. 9, 1970, Ser. No. 87,672
Int. Cl. B25b *13/44*
U.S. Cl. 81—90 A **7 Claims**

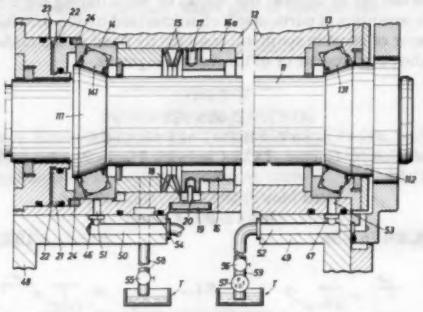


A chuck key is provided which has a handle member at one end and a pilot at the other end of the key. A pinion is provided around and adjacent the pilot. The pinion has a cylindrical recess which is coaxial with the axis of the pilot and provides a space between the pilot and the pinion. An ejector member is also provided which comprises a cylindrical collar. The collar extends in the cylindrical recess and slidably embraces the pilot. The collar is spring-biased to extend to a position beyond the forwardmost surface of the pinion. The collar is movable into the recess when pressure is applied to the key for use thereof in a chuck. The collar acts to eject the key from the chuck when the pressure is released.

3,686,986
MULTIPLE SPINDLE MACHINE TOOL WITH HYDRODYNAMIC BEARINGS FOR WORK SPINDLES

Alfred Ledergerber; Hans Jacoby, and Gerd Fengler, all of Bielefeld, Germany, assignors to Werkzeugmaschinenfabrik Gildemeister & Comp. Aktiengesellschaft, Bielefeld, Germany

Filed Jan. 22, 1970, Ser. No. 4,894
Claims priority, application Germany, Jan. 27, 1969, P 19 03 882.5
Int. Cl. B23b *19/02*
U.S. Cl. 82—30 **15 Claims**



A multiple spindle automatic tool wherein an indexible carrier for the work spindles accommodates pairs of sliding type bearings for the spindles and adjustable springs which bias the inner races of the bearings against the respective spindles. The bias of the springs can be counteracted by a hydraulic control system which can reduce the pressure between selected inner races and the respective spindles.

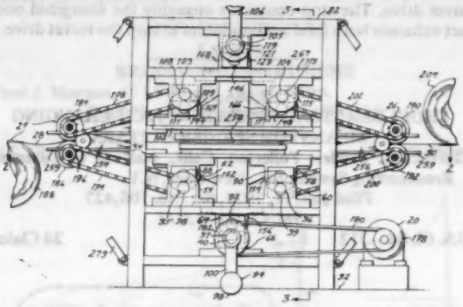
3,686,987
MACHINE FOR AND PROCESS OF DIECUTTING

Rene D. Colinet, and William I. Bulmash, both of Philadelphia, Pa., assignors to Industrial Research Laboratory, Inc., Philadelphia, Pa.

Continuation-in-part of Ser. No. 855,905, Sept. 8, 1969, Pat. No. 3,618,437. This application Oct. 19, 1970, Ser. No. 81,853The portion of the term of this patent subsequent to Nov. 9, 1987, has been disclaimed.
Int. Cl. B23b *29/00*
U.S. Cl. 83—37 **23 Claims**

Die and backer, constantly facing each other, travel in cooperating paths which bring them closer to each other with sheet material sandwiched between, all traveling at the same speed in the same direction, and then together to effect a contour cut. The die may move in a circular path or a quasi elliptical path and the backer may move in a similar path to the die or may move in a linear path. The two sides of the backer may be somewhat relatively dephased to produce a rocking component of motion and a rocking cut. Specific preferred struc-

ture includes shafts in sets of three and transmission of motion

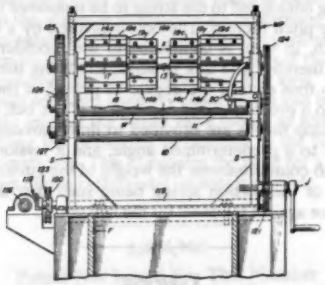


from below the sheet material to above it by pairs of lever arms attached to rollers in roller guides.

3,686,988
BAG MAKING MACHINE

Albert L. Ross, P.O. Drawer 1120, Hammond, La.

Division of Ser. No. 737,640, June 17, 1968, Pat. No. 3,561,332. This application April 24, 1970, Ser. No. 43,291
Int. Cl. B26f 1/20
U.S. Cl. 83—300 **3 Claims**

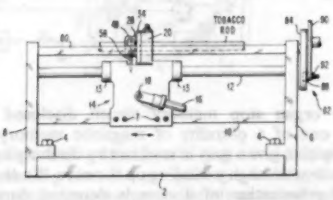


A perforator roller assembly for use in bag making machines. The assembly includes a pair of cooperating rollers, one holding perforating toothed blades and the other serving as an anvil for said blades. The blades are mounted in individual holders which are separately adjustable as to angular and axial positioning and also replaceable with other blades of different pitch diameters.

3,686,989
QUICK-RETURN SEVERING DEVICE FOR A MOVING CONTINUOUS ROD

Hans C. Dreher, Dallas, Pa., assignor to General Cigar Co., Inc., New York, N.Y.

Filed Nov. 25, 1970, Ser. No. 92,594
Int. Cl. B26d 1/56
U.S. Cl. 83—32 C **7 Claims**

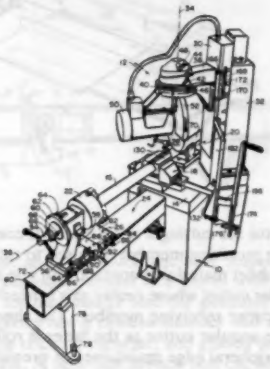


In a high-speed machine for making a tobacco rod of the cigar or cigarette type, a quick-return, rotary severing device is mounted on a support plate having a longitudinal ledger guide for the tobacco rod. The support plate is transversely attached to a frame which reciprocates parallel to the tobacco rod passing through the ledger guide. In timed relation to the reciprocation of the frame and attached support plate, the blade of the rotary severing device cuts through the continually moving tobacco rod.

3,686,990
CUTTING ELONGATED STOCK

David H. Margolien, Lexington, Mass., assignor to Geometron Company, Inc., Lexington, Mass.

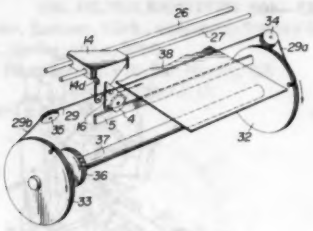
Filed March 5, 1970, Ser. No. 16,792
Int. Cl. B26d 7/06
U.S. Cl. 83—409 **7 Claims**



An improved technique for cutting the end of elongated stock at a selected angle to the longitudinal axis of the stock. The machine includes a chuck for securing and supporting the trailing end of the stock. The chuck is mounted for movement along a rail to advance the leading end of the stock along its longitudinal axis to a cutting station. The chuck includes an arrangement for precision advancement along the rail and for measuring accurately the distance through which the chuck and its supported stock are advanced. The chuck also is rotatable to enable the angular position of the stock to be adjusted about its longitudinal axis. The degree of angular rotation of the chuck is controlled and measured precisely by a protractor which is rotatable with respect to the chuck to enable the protractor to be set to a fixed reference index. The protractor thereafter is secured to the chuck for rotation in unison there-with and provides a precise indication of the angle through which the chuck and the stock has been rotated. A cutting unit having a cutter blade is located at the cutting station and is mounted for movement toward and away from the stock along a cutter descent axis which is perpendicular to the longitudinal axis of the stock. A dual vise arrangement is provided for holding the stock on both sides of the region where the cut is to be made. The cutting blade, which lies in a vertical plane, is adjustably rotatable about the cutter descent axis to vary the angle which the blade makes with the stock. The cutting blade is part of a cutting unit which is mounted to a supporting post for movement toward and away from the cutting station. The supporting post is located in a position which enables the cutter blade to be rotated through its full range of angular positions without directing swarf toward the post or any other portion of the machine. Additionally, the cutting unit is counterbalanced so that the operator need only apply minimal force to urge the cutter downwardly toward and through the elongated stock. The machine also includes an improved arrangement for marking the protractor and the scale which indicates the position of the cutting unit above the cutter descent axis. These improvement scales are adapted to enable a relatively simple programmed series of steps to be

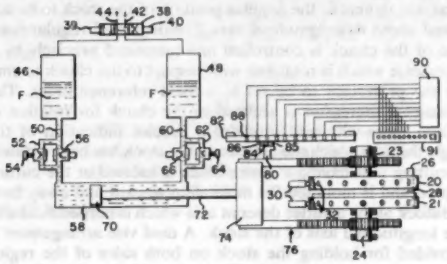
provided to the operator for cutting relatively complex parts. Gauges and limit stops also are associated with the counterbalanced cutter unit to enable the operator to control accurately and repetitively the depth of cut.

3,686,991
APPARATUS FOR CUTTING A SHEET MATERIAL
Sakae Fujimoto, Tokyo, Japan, assignor to Kabushiki-Kaisha Ricoh, Tokyo, Japan
Filed Feb. 5, 1970, Ser. No. 8,924
Claims priority, application Japan, Feb. 20, 1969, 44/13085
Int. Cl. B26d *1/20*
U.S. Cl. 83—482 **8 Claims**



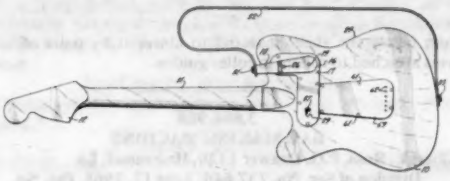
An apparatus for cutting a sheet material comprising a bar-shaped cutter receiving member disposed to extend across the width of the sheet material in contact with one surface thereof and an annular cutter whose center axis is nearly normal to an edge of the cutter receiving member. The sheet material can be cut by the annular cutter as the latter is rolled with a portion of its peripheral edge maintained in pressing engagement with the edge of the cutter receiving member..

3,686,992
TURRET INDEXING MECHANISM
Dennis Daniels, Williamsville, N.Y., assignor to U.S. Amada, Ltd., Seattle, Wash.
Filed Feb. 19, 1971, Ser. No. 112,859
Int. Cl. B26d *5/04*
U.S. Cl. 83—551 **5 Claims**



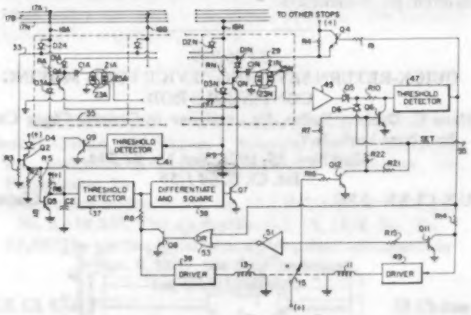
A pneumatic-hydraulic control is coupled with either a manually or numerically controlled punch press to rotate the turrets of the press to the proper positions. Pneumatic pressure is directed selectively to one of two fluid accumulators to force fluid from that accumulator through an open deceleration valve to drive a piston which in turn is coupled to a rack and pinion drive for rotating the turrets. The other side of the piston is exhausted through an open deceleration valve to the other fluid accumulator. A slider switch having a central stop contactor and two deceleration contactors is secured to the rack and moves with the rack across a linear multi-contact slidebar. One of the contactors on the slidebar corresponding with the desired station on the turret is energized. A deceleration contactor engaging the energized contact closes the deceleration valve of the driving fluid accumulator forcing the fluid to go through a restricted passage thus decelerating the turret drive. The stop contactor engaging the energized contact exhausts both fluid accumulators to stop the turret drive.

3,686,993
SHOULDER STRAP-OPERATED PITCH-CHANGING MEANS FOR SPANISH GUITARS
Clarence L. Fender, Fullerton, Calif., assignor to Columbia Broadcasting System, Inc., New York, N.Y.
Filed Jan. 11, 1971, Ser. No. 105,427
Int. Cl. G10d *3/14*
U.S. Cl. 84—312 **24 Claims**



The pitch-changer is mounted in a cavity in the body of a Spanish guitar, and incorporates a second-class lever in the form of a bolt which is adjustably associated with a link, the latter being connected to the string to be tensioned in order to change the pitch thereof. The bolt is pivoted by a bell-crank lever which, in turn, is connected to the shoulder strap for operation thereby. The link is adjustable along the length of the bolt to thus change the degree of pulling of the string in response to a predetermined movement of the bell crank and the bolt. Stop means are provided to limit movement of the bell crank to a predetermined angle, and a torsion spring is provided to counterbalance the weight of the guitar body, the mounting of the torsion spring being such that there is no lateral force against the pivot for the bell crank.

3,686,994
ORGAN STOP MEMORY CIRCUIT
Rosario S. Badessa, Dedham, Mass., assignor to Damon Corporation, Needham Heights, Mass.
Filed April 19, 1971, Ser. No. 135,051
Int. Cl. G10b *3/10*; G11c *11/06*
U.S. Cl. 84—345 **6 Claims**



In the organ stop memory circuit disclosed herein, a selected one of a plurality of magnetic memory cores associated with a given stop is read out by discharging a respective capacitor through a winding on the core. If a change in the sense of polarization of a core is detected during such a readout, the stop is set and a recharging pulse is applied to the entire set of charge storage capacitors. The particular capacitor which was discharged is recharged by this pulse, through

the core winding, thereby resetting the polarization of that core to its original sense.

3,686,995

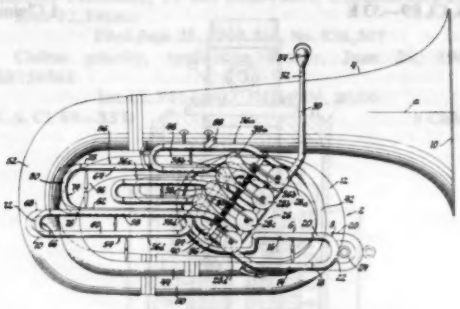
BRASS WIND INSTRUMENT

Fred J. Marzan, 611 S. St., St. Cloud, Minn.

Filed Nov. 21, 1969, Ser. No. 878,764

Int. Cl. G10d 9/04

U.S. Cl. 84—389 19 Claims



A four-valved brass wind instrument such as a tuba or baritone having a main tuning slide which is located to be accessible to the player at all times while performing and can be easily manipulated by the left hand during a performance. The valve assembly is arranged so that the fingers of the right hand can rest comfortably and naturally on the keys. The fourth valve is built with two auxiliary slides which can be extended to lower the pitch of the fourth valve tubing an additional half tone enabling the performer to descend to the fundamental pitch chromatically. This eliminates the need for a fifth valve, and positive tuning in the pedal register is possible.

3,686,996

Patent Not Issued For This Number

3,686,997

BOBBIN FOR BRAIDING MACHINES

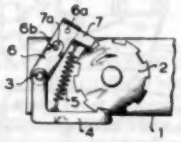
Reiner Strangfeld, Oldenburg, Germany, assignor to August Herzog Maschinenfabrik, Am Alexanderhaus, Germany

Filed Oct. 19, 1970, Ser. No. 81,879

Claims priority, application Germany, Oct. 17, 1969, P 19 52 457.3

Int. Cl. D04c 3/18

U.S. Cl. 87—57 9 Claims



Bobbin for braiding machines having a braiding spool and a thread tensioning element, comprising a locking device constituted by return stop means resiliently arranged between the bobbin and said spool and acting upon a toothed wheel operatively connected with said spool, and forward stop means which also act upon said wheel. The return stop means is preferably in the form of a locking lever while the forward stop means is preferably constituted by a bearing lever, in association with a ratchet lever pivoted thereon. The locking and bearing levers may have a common pivotal attachment to a support of the bobbin.

3,686,998

RIFLE CHARGING MECHANISM

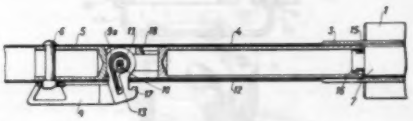
Paul Seifried, Badenweiler, Germany, assignor to Rheinmetall GmbH, Dusseldorf, Germany

Filed Jan. 7, 1970, Ser. No. 1,192

Claims priority, application Germany, Jan. 17, 1969, P 19 02 275.4

Int. Cl. F41d 5/00

U.S. Cl. 89—1 K 2 Claims



An automatic and semi-automatic rifle, respectively, with a cocking tube disposed parallel to a barrel with a lateral longitudinal slot for the passage and the guidance of a cocking lever, which comprises a closure member and a bearing bolt mounted on the cocking member, and guided displaceably in the cocking tube. A tube-like breech bolt carrier is guided in the cocking tube and is adapted to slide backwardly for tensioning of the breech bolt. The cocking member comprises a cocking slide which extends over the entire length of the loading lever slot and supports the inner wall of the cocking tube.

3,686,999

MUNITION

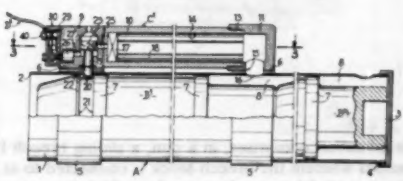
Marcel Francois, Chatenay-Malabry, Franceiss Brandt0 to Etat Francais represente par le Ministre des Arms, Delegation Ministerielle pour L'Armement-Direction Technique, des Constructions Aeronautiques et Compagnie Francais Thomson-Houston, Hotchkiss Brandt, Paris, France

Filed March 4, 1970, Ser. No. 16,302

Claims priority, application France, March 4, 1969, 6905801

Int. Cl. F41f 1/00

U.S. Cl. 89—1 R 1 Claim



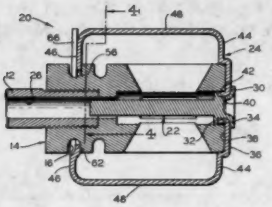
A munition comprising a plurality of missiles disposed in axially aligned adjoining relation in a tube. A firing system is provided for firing the missiles one after the other at a high firing rate. Safety means ensure that a missile cannot be fired before the missile immediately preceding it is fired.

3,687,000

GAS OPERATED FIREARM MUZZLE ATTACHMENT

John R. Csizmar, and Herbert A. Hebeler, both of Davenport, Iowa, assignors to The United States of America as represented by the Secretary of the Army

Filed April 30, 1970, Ser. No. 33,456
Int. Cl. F41f 17/12; F41c 21/18
U.S. Cl. 89—14 E 8 Claims



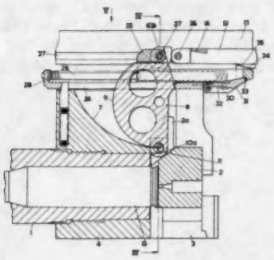
A gas operated firearm muzzle attachment for generating sufficient gas pressure in the barrel to operate the firearm gas system when blank cartridges are used and comprising a solid restrictor insertable into the barrel bore to partially block the escape of discharge gases therefrom and a clamp for quickly and easily mounting the restrictor to the barrel.

3,687,001

SLIDING BREECH BLOCK MECHANISM

Norman Trevor Brint, 4 The Cobbins, Waltham Abbey, Essex, England

Filed May 6, 1966, Ser. No. 549,429
Int. Cl. F41f 11/02
U.S. Cl. 89—24 15 Claims



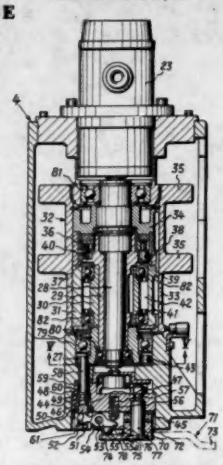
This invention comprises, in a gun, a sliding breech block mechanism wherein the breech block is connected to at least one pivot carried by a rocker member which incorporates a convex rocker segment in hypocyclic engagement with a coacting concave track formed in, or attached to, the gun: means being provided for inducing, on recoil of the gun, hypocyclic motion of each rocker segment relative to its track whereby the consequent movement of the pivot or pivots operates the breech block.

3,687,002

MOTOR DRIVEN FEED MECHANISM FOR FEEDING A CARTRIDGE BELT THROUGH A CHANNEL TO AN AUTOMATIC FIREARM

Ernst Mosli, Zurich, and Louis Zurbuchen, Dietlikon, both of Switzerland, assignors to Werkzeugmaschinenfabrik Oerlikon-Buhrle AG, Zurich, Switzerland

Filed Oct. 15, 1970, Ser. No. 80,917
Claims priority, application Switzerland, Oct. 28, 1969, 16090/69
Int. Cl. F41d 9/02
U.S. Cl. 89—33 E 1 Claim



A mechanism for feeding a cartridge belt through a channel to an automatic firearm using a hydraulic motor which directly drives a feed wheel. The mechanism includes a excess pressure relief valve to prevent an overload of the mechanism.

3,687,003

ARMORED TURRET WITH DUAL FEED MEANS

Louis Zurbuchen, Dietlikon, and Hanspeter Novet, Hegnau, both of Switzerland, assignors to Werkzeugmaschinenfabrik Oerlikon-Buhrle AG, Zurich, Switzerland

Filed April 30, 1970, Ser. No. 33,358
Claims priority, application Switzerland, May 8, 1969, 7067/69
Int. Cl. F41h 5/20, 5/16; F41d 9/00
U.S. Cl. 89—36 K 2 Claims

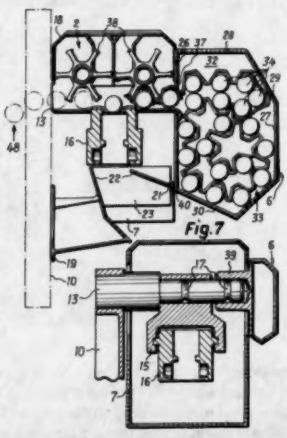


Fig. 7

An armored turret has one or more automatic firearms mounted on the outside of the turret. Armor protects the

firearms on the sides remote from the turret. A first means for feeding ammunition to said firearm is provided from inside the turret, and a second means for feeding ammunition to each firearm is located within the armor protecting each firearm. A magazine for a supply of ammunition is located inside the protecting armor.

3,687,004

AMMUNITION DRUM AND TURRET FOR AUTOMATIC WEAPONS

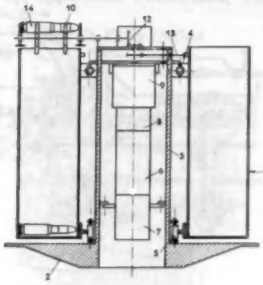
Jacques Faisandier, 32 Bd. Felix-Faure, Chatillon-sous-Bagneux 92, France

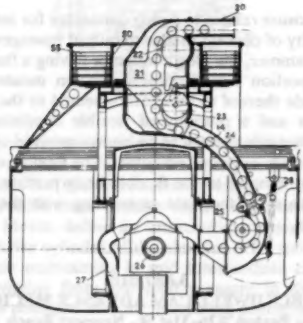
Filed June 25, 1969, Ser. No. 836,307

Claims priority, application France, June 26, 1968, 68156561

Int. Cl. F41d *9/02*; F41f *9/06, 23/06*

U.S. Cl. 89—33 D **8 Claims**





Apparatus for the automatic supply of munitions to automatic weapons disposed in turrets comprising a rotating drum for intermediate storage, means adapted to load a belt of munitions in helicoidal form in said drum and to discharge said belt from said drum and a servo control means for the control of the speed of rotation of said drum in dependance of the rate of firing.

3,687,005

ELEVATION GEAR FOR A FIRING DEVICE FOR JET-PROPELLED GUIDED MISSILES

Franz Pfister, Hochstadt; Ernst Albrecht, Unterhaching; Josef Durner, Ottobrunn, and Eicke Maus, Solingen, all of Germany, assignors to Messerschmitt-Bolkow-Blohm Gesellschaft mit beschrankter Haftung, Munich, Germany

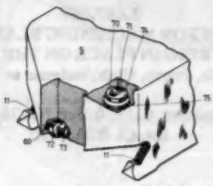
Filed April 27, 1970, Ser. No. 32,151

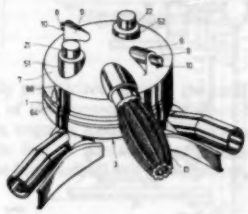
Claims priority, application Germany, May 29, 1969, P 19 27 435.2

Int. Cl. F41f *21/04*

U.S. Cl. 89—41 R **11 Claims**

The elevation gear is disengageably mounted on a traversable sub-structure, and includes a threaded spindle rotatably mounted on a support and two plungers mounted in laterally spaced relation on the support for displacement upwardly and downwardly, the plungers serving as supports for the firing device. Abutments on the support between the plungers are disengageably cooperable with the firing device to serve as a pivot axis for elevational displacement of the firing device. A play-free transmission interconnects the spindle and the plungers and is operable, responsive to rotation of the spindle, to displace the plungers simultaneously in respective opposite directions. The transmission comprises two nuts threaded on





the spindle and each connected to a respective lever, with each lever engaging the lower end of a respective plunger. The free ends of the levers are inclined and ride on respective rollers so that, when the nuts are displaced longitudinally by rotation of the spindle, the free ends of the levers are moved upwardly or downwardly. The plungers have rollers at their lower ends engaging the respective levers, and the upper ends of the plungers engage rollers on the firing device. One of the plungers is spring loaded. An elevation indicator is articulatedly connected to one of the nuts.

3,687,006

ATTACHMENT FOR CUTTING RACK GEAR TEETH OF VARIABLE PITCH

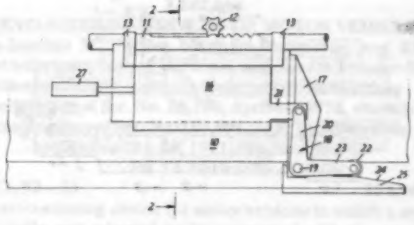
Michael David Baxter, Rochester, England, assignor to Hobourn-Eaton Manufacturing Company Limited, Rochester, England

Filed June 19, 1970, Ser. No. 47,785

Claims priority, application Great Britain, June 23, 1969, 31,682/69

Int. Cl. B23f *1/06, 23/00*

U.S. Cl. 90—7 **5 Claims**



The specification describes an attachment for a rack cutting machine having a reciprocating rotary cutter for cutting the rack teeth, a holder for a workpiece on which the rack teeth are to be cut, and feed means for moving the cutter and the holder relative to each other in a direction lengthwise of the

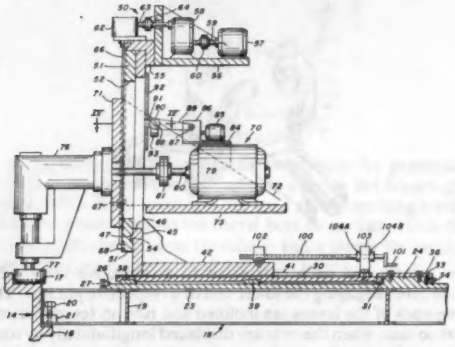
workpiece at a speed which bears a constant ratio to the speed of rotation of the cutter, which attachment comprises means for superimposing on this relative movement a secondary movement in said direction to displace the cutter and the holder from their relative positions determined by the feed means by a distance which varies in dependence on the instantaneous relative positions of the holder and workpiece in said direction. Instead of being in the form of an attachment, the components may be built into a rack cutting machine.

3,687,007

APPARATUS FOR MACHINING BLAST FURNACE HOPPER RING IN PLACE ON THE FURNACE

Leonard F. Harris, Provo, Utah, assignor to United States Steel Corporation

Filed Oct. 6, 1970, Ser. No. 78,539
Int. Cl. B23c *1/20*
U.S. Cl. 90—12 7 Claims



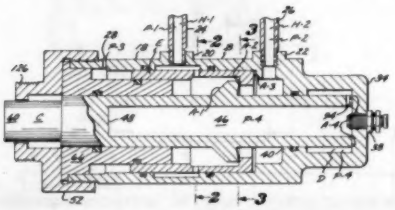
Portable machining apparatus to be mounted in the top of a blast furnace for milling a level surface on a blast furnace hopper ring to enable a gas-tight seal to be formed between the blast furnace stack and the large bell hopper. This prevents flue gas and entrained solids from escaping into the atmosphere. The apparatus includes means for moving the cutting head circumferentially, radially, vertically and horizontally.

3,687,008

PRESSURE FLUID CONTROLLED RECIPROCATING MECHANISM

Richard M. Densmore, South Gate, Calif., assignor to W. J. Savage Co., Inc., Knoxville, Tenn.

Filed Feb. 1, 1971, Ser. No. 111,359
Int. Cl. F15b *15/22*; F01b *7/18*; F01l *17/00*
U.S. Cl. 91—25 9 Claims



A fluid controlled mechanism that includes a reciprocating member that is actuated by stored potential energy, with the member as it moves from a second to a first position providing usable kinetic energy. Two moving parts of the mechanism so distribute fluid at three different pressure levels on a plurality of different sized areas that said member alternately and automatically moves between said first and second positions. The stored potential area may result from a pressurized gas head, a spring, weight means, or the like. The fluid at one of the three pressure levels may be air at the ambient pressure if desired.

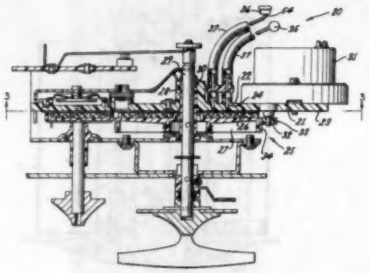
The mechanism may be employed for such diverse purposes as a high velocity energy generator in an impact or demolition tool, as well as a reciprocating power source in hammers, chisels and spades, and also as a power source for pumps, boosters, sickle bars, concrete screeds and the like.

3,687,009

PNEUMATIC HARNESS PLUG ASSEMBLY OR THE LIKE

Reed A. Palmer, Greensburg, Pa., assignor to Robertshaw Controls Company, Richmond, Va.

Division of Ser. No. 578,687, Sept. 12, 1966, Pat. No. 3,523,700. This application May 4, 1970, Ser. No. 46,575
Int. Cl. F15b *21/02*
U.S. Cl. 91—37 6 Claims



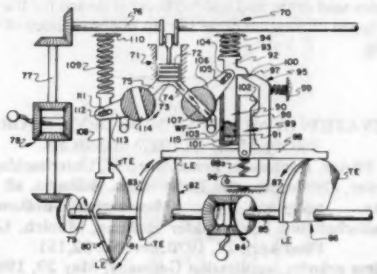
This disclosure relates to a plug connector for interconnecting a plurality of conduit means to output passages of a pneumatic programmer, the plug connector having a flexible plate-like body portion with flexible extension means extending from one side thereof to be interconnected to the pneumatic programmer and a plurality of flexible conduits extending from the other side thereof to be interconnected to a plurality of pneumatically operated actuators. The flexible conduits are permanently secured to the flexible body portion of the plug connector so as to facilitate assembling with the pneumatic programmer.

3,687,010

VARIABLE DWELL CAM ADVANCE MECHANISM

Douglas Ray Paxton, 426-31st St., Newport Beach, Calif.

Division of Ser. No. 826,628, May 21, 1969, Pat. No. 3,608,862. This application Oct. 5, 1970, Ser. No. 78,040
Int. Cl. F01l *31/16*, *31/02*
U.S. Cl. 91—262 7 Claims



A pair of radial cams bear against a common cam follower whose motion controls the operation of a valve, such as an inlet valve for admitting a working fluid into a power cylinder. When raised segments of both cams simultaneously engage

the cam follower then the cam follower is sufficiently raised to fully open the valve. The dwell period of the cam follower in its raised position dictates the time during which the valve remains fully open. The cam follower dwell period can be varied by adjusting the angular relationship between the cams.

A reversing control interconnects the cams and a drive shaft in order to selectively reverse the rotational direction of the drive shaft. The valve is coupled to a quick-opening mechanism and is also coupled to a quick-closing mechanism which serves to snap the valve closed when the cams and the cam follower move to predetermined positions.

3,687,011

CONTROL VALVE BLOCK FOR HYDRAULICALLY OPERATED ELEVATORS

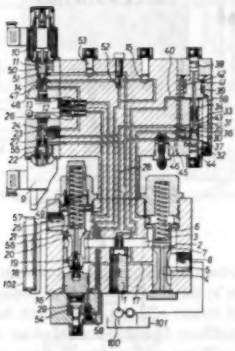
Hubert Haussler, Zug, Switzerland, assignor to Beringer-Hydraulik R. Beringer & Co., Neuheim/Zug, Switzerland

Filed April 21, 1970, Ser. No. 30,378

Claims priority, application Switzerland, April 25, 1969, 6338/69

Int. Cl. F15b *13/044*

U.S. Cl. 91—459 **18 Claims**



A control valve block assembly for hydraulically operated elevators or the like comprising a single pressure differential balance means for both directions of travel of the elevator, this pressure differential balance means incorporating a control piston. Means define an intermediate channel communicating with the cylinder of the elevator drive unit, with said control piston maintaining in said intermediate channel the pressure deviating from the load pressure in the elevator cylinder by a constant amount. Reversing piston means serve to determine the deviation of the pressure at the high side or the low side of such load pressure, depending upon the direction of travel of the elevator. Further, dosing piston means is provided which in its open position provides a flow communication from said pressure differential balance means to said cylinder and thus regulates the quantity of hydraulic fluid medium flowing to and from such cylinder. Two electromagnets are also provided, each of which is operatively coupled with one precontrol slide means, and when energized actuates its associated precontrol slide means, one such precontrol slide means directly controlling the position of said control piston and the other precontrol slide means directly controlling the position of said dosing piston means.

3,687,012

HYDRAULIC MOTOR

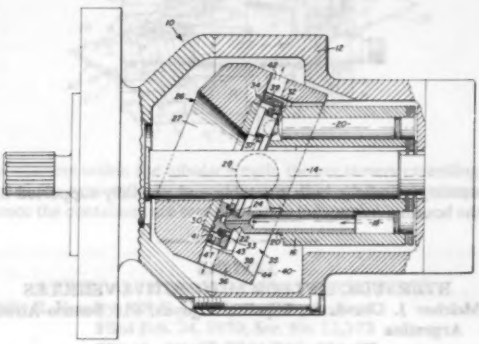
Gary Stein, Brookfield, and Allan E. Heinrich, Oconomowoc, both of Wis., assignors to Applied Power Industries, Inc., Milwaukee, Wis.

Filed Nov. 2, 1970, Ser. No. 86,065

Int. Cl. F01b *13/04*

U.S. Cl. 91—507 **3 Claims**

A fluid motor of the type having a tiltable cam plate. The cam plate is of a cup-shaped configuration and defines a cavity. Apertures are provided in the walls of the cam plate to permit circulation of hydraulic fluid through the cavity. The cam plate is tilted by hydraulically actuated control pistons on each side of the pivotal axis of the cam plate, with one of the pistons



being constantly pressurized to urge the cam plate to a first position. Each of the control pistons, when in the fully extended position, engages a portion of the cam plate in such a manner that the line of contact therebetween is in a plane transverse to the longitudinal axis of the piston.

3,687,013

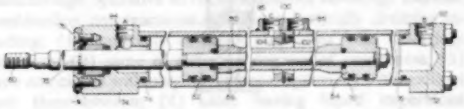
HYDRAULIC SPEED CONTROL FOR AIR CYLINDERS

Hans R. Haller, 14 Delaware St., Sidney, N.Y.

Filed Dec. 23, 1970, Ser. No. 99,730

Int. Cl. B15b *15/22*

U.S. Cl. 92—8 **4 Claims**



A two-piston cylinder unit with air actuation through two separate parts controlling one piston, the other piston in an oil-filled speed control section. The hydraulic cylinder controls, or limits, the speed or movement of the air cylinder, and a specified speed rate may be achieved for any section or part of the total or complete movement by means of in-built control rods and cooperating aperture.

3,687,014

SERVO-STEERING SYSTEM FOR MOTOR VEHICLES

Hans-Joachim M. Forster, Stuttgart-Riedenberg, and Klaus Katz, Stutgart, both of Germany, assignors to Daimler-Benz Aktiengesellschaft, Stuttgart-Unterturk-Rein, Germany

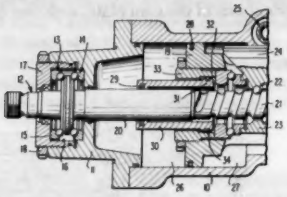
Continuation of Ser. No. 28,188, April 14, 1970, which is a continuation of Ser. No. 759,981, Sept. 16, 1968. This application Oct. 29, 1971, Ser. No. 193,643

Int. Cl. F01b *3/00*

U.S. Cl. 92—33 **15 Claims**

A servo-steering device for motor vehicles in which a steering spindle part adapted to be connected with the steering wheel is rotatably supported within the steering gear housing while a working piston, drivingly connected with the steering gear output shaft, is displaceably arranged within the housing; at least one seal is arranged between the working piston and the steering spindle part; the steering spindle part is also pivotally supported at least in the housing of the steering gear.

The pivotal support includes a bearing race which permits a slight radial movement of the steering spindle such that the steering spindle is both rotatably and pivotally supported in the housing.



3,687,015

HYDRAULIC LIFT FOR AUTOMOTIVE VEHICLES

Melchor J. Chavarria, Hipolito Irigoyen, 615 Buenos Aires, Argentina

Filed May 28, 1970, Ser. No. 41,357
Int. Cl. F01b 7/20
U.S. Cl. 92—53 **7 Claims**

A hydraulic lift for automotive vehicles having a plurality of tubular elements which communicate with each other with telescopic cooperation comprising a plurality of axially aligned cylinders, each of which is rigidly connected with a disc-shape transverse plate arranged at its upper base and provided with an elastic packing disposed thereon and having a peripheral edge which constitutes a friction ring with respect to the inner walls of each immediately preceding cylinder, the cylinders forming chambers of variable volume in a number of one per cylinder which communicate with one another through respective central conduits, and a helical tension spring passing through the conduits and extending from the upper cover of the uppermost cylinder to the lower end of the bottom cylinder.

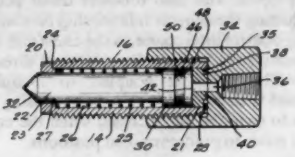
3,687,016

THREADED BODY RAMS

Vitas T. Thomas, and Robert A. Lovdahl, both of Racine, Wis., assignors to Tomco, Inc., Racine, Wis.

Continuation of Ser. No. 719,356, April 8, 1968, abandoned. This application May 18, 1970, Ser. No. 37,475
Int. Cl. F01b 30/00
U.S. Cl. 92—130 **1 Claim**

Disclosed herein is a work holding assembly including a hydraulic device having a threaded cylindrical housing which is adapted to be supported for axial adjustment in a threaded aperture in a mounting bracket and a ram mounted for reciprocal motion in the housing and retained therein by an integral part of the housing and a bushing mounted on the housing with a single O-ring to seal the connection between the bushing and the housing and the connection for the fluid flow passage through the bushing and into the housing.

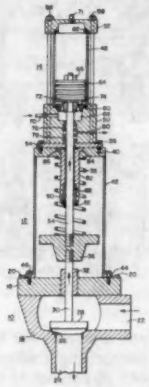


3,687,017

SERVO-ACTUATOR MECHANISM

Ivor James Lewis, Aston, and John T. Stone, Philadelphia, both of Pa., assignors to Westinghouse Electric Corporation, Pittsburgh, Pa.

Filed Dec. 8, 1970, Ser. No. 95,996
Int. Cl. F01b 1/00
U.S. Cl. 92—165 **7 Claims**



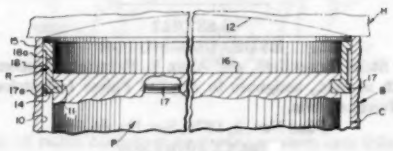
A seal bushing and rod bearing for the piston rod of a servo-actuator of a pull type are mounted externally of the actuator cylinder to provide additional sealing in case of failure of the conventional high pressure seals and to provide better guidance for the piston rod to minimize rod seal wear. The length of the external housing for the seal bushing and the rod bearing is greater than the stroke length of the actuator, thereby protecting the conventional sealing surface of the piston rod against mechanical damage.

3,687,018

HIGH COMPRESSION PISTON RING AND PISTON ASSEMBLY

Edward F. Sullivan, 4465 Bradford St., Saginaw, Mich.

Filed May 22, 1970, Ser. No. 39,657
Int. Cl. F16j 9/02, 9/08, 11/04
U.S. Cl. 92—169 **7 Claims**



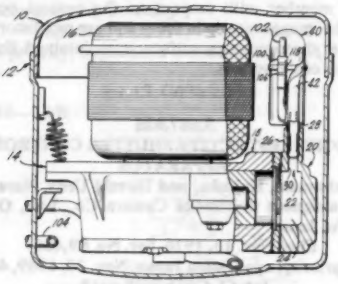
A piston and ring assembly for internal combustion engines wherein a piston mounts a split piston ring having a portion

seated in a groove for the ring and a portion extending radially outwardly of the piston to engage the cylinder wall, the cylinder wall engaging portion projecting longitudinally outwardly beyond the piston end wall a distance such that the fuel explosion forces exert sufficient radial pressure on the longitudinally projecting portion to seal off explosion residuals which otherwise would leak past between the ring and cylinder wall.

3,687,019
HERMETIC COMPRESSOR DISCHARGE TUBE JOINT CONSTRUCTION

Rudolf Herman Wolf, Adrian, Mich., assignor to Tecumseh Products Company, Tecumseh, Mich.

Filed April 24, 1970, Ser. No. 31,503
Int. Cl. F01b *11/02*
U.S. Cl. 92—169 **1 Claim**



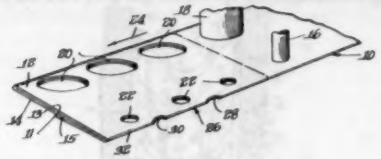
A hermetic compressor discharge line construction wherein the discharge chamber in the cylinder head of the compressor is connected to an external high side outlet by a discharge passageway which includes a discharge muffler and inlet and outlet tubes connected thereto. The muffler inlet tube is joined to the cylinder head by spaced portions of the inlet tube engaging with an interference fit the wall of a bore in the cylinder head. A reduced diameter portion of the inlet tube disposed between the spaced portions defines a clearance space with the bore which is filled with an anaerobic curing adhesive sealant composition. The muffler outlet tube is joined to a discharge conduit by a telescopic connection wherein a male tube end is engaged mechanically at two spaced points in the bore of the female member, the space between the two engagement points likewise being filled with an anaerobic curing sealant composition. These joints are made by outwardly flaring the mouth of the female member, partially inserting the male end in the mouth, placing liquid adhesive in the well defined by the space between the mouth and male tube, and then further inserting the male member until it engages an internal shoulder in the female member.

3,687,020
METHOD OF MAKING CONTAINER CARRIER STRUCTURE

Ernest R. Cunningham, Libertyville, and William D. Stockdale, Arlington Heights, both of Ill., assignors to Illinois Tool Works Inc., Chicago, Ill.

Division of Ser. No. 753,121, Aug. 16, 1968, Pat. No. 3,570,663. This application June 8, 1970, Ser. No. 56,996
Int. Cl. B31b *49/04, 1/24, 1/86*
U.S. Cl. 93—35 H **3 Claims**

A container carrier and method for making the same. The carrier comprises an open-ended tubular or endless length of flexible material oriented so as to provide an upper and lower layer interconnected by a pair of opposing side walls. A plurality of aligned apertures is provided in each of the layers for receiving respective ends of containers therein, thereby to secure said containers within said carrier. An alternative embodiment of the carrier includes a plurality of elongated openings in the opposing side walls for initially receiving the

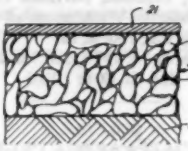


containers within the tubular length, the containers extending partially outwardly from said carrier through said openings once the containers are secured within the carrier.

3,687,021
VERTICALLY DRAINING FLAT STRUCTURES

Billy R. Hensley, 829 E. 17th Terr., Ottawa, Kans.

Filed Feb. 24, 1970, Ser. No. 13,273
Int. Cl. E01c *7/18*
U.S. Cl. 94—9 **12 Claims**



Methods of and means for permitting and providing vertical liquid drainage in a support or surfacing construction; a structure permitting vertical liquid drainage therethrough; substructure operative to provide vertical liquid drainage therethrough operative to receive outdoor coverings thereon; combination constructions which are vertically draining including: (1) vertically draining structures with coverings thereover; (2) same of different degrees of coarseness; (3) same associated with playing surfaces, optionally with resilient mats therebetween; (4) same having liquid impervious coverings therebeneath; (5) vertically draining surfacing constructions coupled with draining means therebelow; methods of making up and laying surfacings of rock and plastic which, when set, permit vertical liquid drainage therethrough; combinations of surfacings which permit vertical liquid drainage throughout the entire area thereof with (a) various footings, (b) impervious liquid repelling means thereunder, (c) coverings therefor, (d) carpetings thereover, (e) liquid draining means thereunder, and (f) playing surfaces optionally with mats thereover.

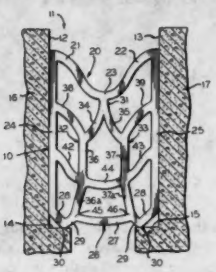
3,687,022
BRIDGE JOINT SEALS

Delmont D. Brown, 333 S. Main St., North Baltimore, Ohio, assignor to D. S. Brown Company, North Baltimore, Ohio.

Filed June 4, 1970, Ser. No. 43,317
Int. Cl. E01c *11/10*
U.S. Cl. 94—18 **9 Claims**

Elongated, hollow elastomer seals particularly useful for the sealing of bridge deck joints, bridge approach joints and like wide joints against intrusion by liquids and imcompressible solids and embodying a transversely concave top wall; a substantially horizontal bottom wall embodying folding foot portions along the respective longitudinal edges thereof; substantially planar side walls, and an internal web network having downwardly diverging webs in the transversely medial portion of the network and diverging from an apex below the longitudinal midportion of said top wall, two or more pairs of laterally extending webs extending between said diverging webs and respective side walls, a pair of diagonally downwardly and out-

wardly sloping webs extending respectively between intermediate portions of the top wall and intermediate portions of



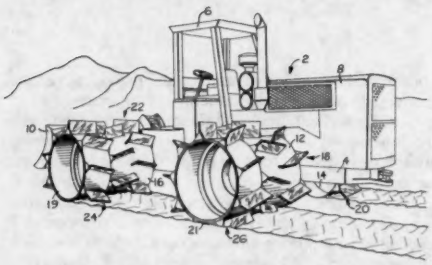
the uppermost pair of laterally extending webs, and optionally a further shallow V-web extending between the legs of said diverging webs.

3,687,023

COMPACTOR WHEEL CONFIGURATION

Raymond L. Moser, Tremont; Dorrance Oldenburg, Peoria, and Donald E. Sunderlin, Washington, all of Ill., assignors to Caterpillar Tractor Co., Peoria, Ill.

Filed March 16, 1970, Ser. No. 19,871
Int. Cl. E01c *19/26*
U.S. Cl. 94—50 **6 Claims**



A compactor vehicle is provided having a plurality of wheels in the form of drums having chopper blades attached thereto in an offset chevron pattern. The offset chevron pattern faces forwardly on the front wheels and rearwardly on the rear wheels thereby providing improved chopping and flattening action when the vehicle is used to prepare land for replanting in forest management or to compact layers or debris and soil when used in sanitary landfill operations. Extension wheels having chopper blades are additionally provided whereby the vehicle may operate satisfactorily under soft soil conditions.

3,687,024

Patent Not Issued For This Number

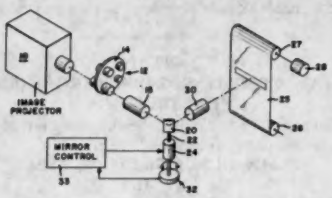
3,687,025

IMAGE SPACING SYSTEM

Seymour Rosin, Massapequa, N.Y., assignor to Harris-Intertype Corporation, Cleveland, Ohio

Filed May 4, 1970, Ser. No. 34,371
Int. Cl. B41b *21/16*
U.S. Cl. 95—4.5 **3 Claims**

An image projection system successively projects images along a common optical axis toward a photosensitive surface. The individual images are spaced side by side on the photosensitive surface. The spacing is accomplished by collimating the image bearing light beams, then diverting the collimated beam by means of a movable reflecting surface (or equivalent) into a refocusing and scan lens assembly from which the light beams emit onto the photosensitive surface. The position of the reflector is controlled by any suitable means such as a servo mechanism. The refocusing and scan lens assembly incorporates compensation for the angular position of the reflecting member with respect to the optical centerline, whereby the images remain in focus and are not distorted even though the photosensitive surface is maintained flat at the image plane of the system.

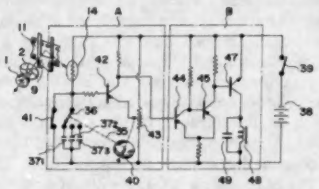


3,687,026

LIGHT REFLECTIVE SHUTTER CONTROL APPARATUS

Tatsuo Kobayashi, Kaizuka, and Hiroshi Ueda, Nara, both of Japan, assignors to Minolta Camera Co., Ltd., Osaka-shi, Osaka-fu, Japan

Filed Nov. 13, 1970, Ser. No. 89,406
Claims priority, application Japan, Nov. 15, 1969, 44/91576
Int. Cl. G03b *7/08, 9/18*
U.S. Cl. 95—10 CT **7 Claims**



A light scattering surface is mounted facing the objective lens to direct light to a photoelectric detector during movement of a shutter curtain so that shutter control is provided during the exposure. An integrating circuit formed by a condenser and the photoelectric detector actuate a switching circuit to control movement of a second shutter curtain to terminate the exposure.

3,687,027

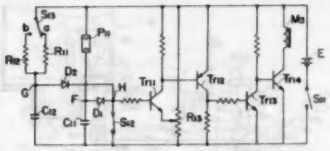
EXPOSURE CONTROL CIRCUITRY FOR USE IN PHOTOGRAPHIC CAMERA

Minoru Watanabe, and Masao Takayama, both of Tokyo, Japan, assignors to Kabushiki Kaisha Koparu, Tokyo-to, Japan

Filed Oct. 23, 1970, Ser. No. 83,456
Claims priority, application Japan, Oct. 31, 1969, 44/103492
Int. Cl. G01j *1/46*
U.S. Cl. 95—10 CT **4 Claims**

An auxiliary time circuit comprising auxiliary resistors connected in series with an auxiliary capacitor is connected, in parallel, with a main time circuit comprising a photoconductive element, such as Cds, connected in series with a photometric or main capacitor. These main and auxiliary time circuits are connected, via separate diodes, respectively, with

a transistorized switching circuit containing therein an electromagnet for controlling the shutter. With this arrangement,



an exposure time range beyond the predetermined time range can be regulated by said auxiliary time circuit.

3,687,028

PHOTOGRAPHIC CAMERA WITH FLASH MECHANISM

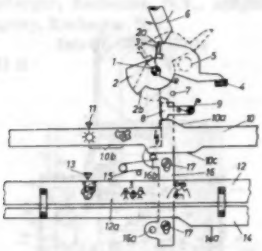
Waldemar T. Rentschler, Schwarzwald, Germany, assignor to Prontor-Werk Alfred Gauthier, G.m.b.H., Calmbach/Schwarzwald, Germany

Filed Dec. 10, 1970, Ser. No. 96,900

Claims priority, application Germany, Dec. 12, 1969, P 19 62 292.5

Int. Cl. G03b 9/58

U.S. Cl. 95—11 R **6 Claims**



A photographic camera has a constant aperture objective lens, focussed by means of a range finder, and a shutter. The shutter includes a timing device which gives at least two exposure times, one of which utilizes all the light of a flash bulb, for example, and another using only a part of the light. An exposure time setting mechanism is operable on the timing device. The range finder coacts with a flash-time setting mechanism which, in turn, acts on the timing device. The exposure time setting device has a special flash setting and, when at this setting, the exposure time setting mechanism is ineffective on the timing device. The flash-time setting mechanism is cooperable with the range finder and, when the exposure time setting mechanism is in the flash setting position, the flash-time setting mechanism is effective on the timing device in accordance with the setting of the range finder, so that a short range setting of the range finder causes the flash-time setting mechanism to act on the timing device to provide a shorter exposure time, and a long range setting of the range finder causes the flash-time setting mechanism to operate the timing device to provide a longer exposure time.

3,687,029

METHOD FOR AUTOMATIC EXPOSURE CONTROL FOR PHOTOGRAPHS WITH FLASH AND MIXED LIGHT AND CAMERA ARRANGEMENT FOR SUCH METHOD

Kurt Leczkowski, Ungererstrasse 66, 8000 Munich 23, Germany

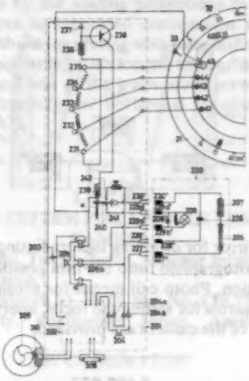
Filed Dec. 26, 1968, Ser. No. 786,913

Claims priority, application Germany, Sept. 30, 1968, P 17 97 468.4

Int. Cl. G03b 7/08, 7/16, 15/04

U.S. Cl. 95—10 CT **28 Claims**

Methods and corresponding arrangements for providing photographic exposures at flash and mixed light (simultaneous influence of daylight and flash conditions). The background illumination by daylight and the foreground brightness through the flash are both properly set for the photographic exposure



to save the user of the camera the need to study tables or schedules. The physical and photo-technical requirements for flash and mixed light exposures vary with the given embodiments.

3,687,030

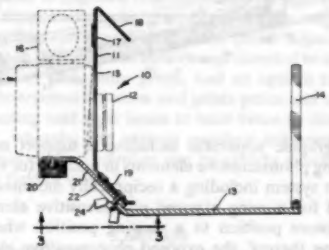
CLOSE-UP CAMERA ATTACHMENT

Lester A. Dine, 145 Grist Mill Lane, Great Neck, N.Y., and Edgar S. Lemmey, 73 Lester Ave., Freeport, N.Y.

Continuation-in-part of Ser. No. 623,118, March 14, 1967, abandoned. This application Dec. 13, 1968, Ser. No. 864,917

Int. Cl. G03b 27/54, 15/06

U.S. Cl. 95—11 **9 Claims**



A camera attachment for close-up use comprising a vertical supplementary lens-holding plate having a downwardly angled light deflecting panel at the upper portion thereof and optionally an upwardly angled light-deflecting panel at its lower portion, a locator arm attached to and extending out from said plate for a fixed and predetermined distance, a view-bracketing frame at the terminus of said arm, an optional translucent light diffuser window in the lens-holding plate opposite the light source and on the vertical side of a hood arrangement formed by the angle between the vertical lens-holding plate and the downwardly angled light-deflecting panel.

3,687,031

MINIATURE CAMERA

William E. Jahnsman, 3940 Chippewa Drive, Boulder, Colo.

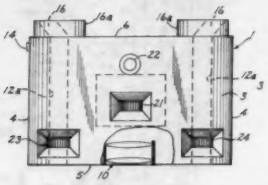
Filed Feb. 5, 1970, Ser. No. 8,907

Int. Cl. G03b 3/00

U.S. Cl. 95—11 R **2 Claims**

A compact miniature camera having a binocular type viewing system incorporated to sight along the hollow shafts of 35

mm. film spools includes an adjustable viewing system to accommodate different eye spacings. The film spools are mounted on each side of the camera housing to move 35 mm. film across a flat bottom wall of the camera housing, and an object lens mounted between the film spools transmits light to



a reflecting mirror for directing light radiating from the object area to be photographed onto the film positioned on the bottom wall portion. Photo cell means for sensing light intensity along with controls for setting the focus, aperture opening and shutter speed of the camera are provided.

3,687,032

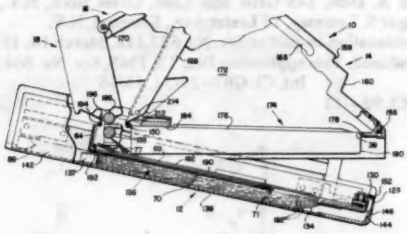
PHOTOGRAPHIC APPARATUS

Irving Erlichman, Wayland, Mass., assignor to Polaroid Corporation, Cambridge, Mass.

Filed May 1, 1970, Ser. No. 33,635

Int. Cl. G03b *17/52*

U.S. Cl. 95—13 **9 Claims**



Photographic apparatus including a support member for supporting photosensitive elements in position for exposure. A transport system including a reciprocally mounted drawer is provided for moving exposed photosensitive elements from the exposure position to a viewing position wherein, after processing thereof, the exposed photosensitive element may be viewed in place or removed from the apparatus. If the exposed photosensitive element is allowed to remain in the viewing position, or if it is returned to the viewing position, the transport system will allow the exposed photosensitive element to be moved to a storage chamber within the apparatus as the transport system moves another exposed photosensitive element between the exposure position and the viewing position.

3,687,033

MECHANISM FOR OPERATING A CAMERA SHUTTER AND A MECHANICALLY OPERABLE FLASH DEVICE IN SYNCHRONISM

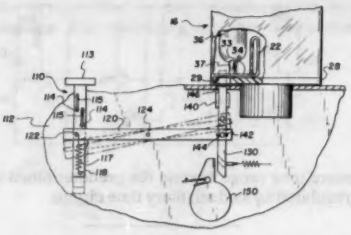
David E. Beach, 901 Elmgrove Road, Rochester, N.Y.

Filed March 30, 1970, Ser. No. 23,534

Int. Cl. G03b *15/04*

U.S. Cl. 95—11.5 R **13 Claims**

A camera or other photographic apparatus having a shutter mechanism and using flash devices is provided with a mechanism for operating the shutter and firing the flash device in synchronism. The mechanism stores energy in response to depression of the camera body release, and then suddenly releases the stored energy through a synchronizing



member causing the member to move in an operative path to actuate the flash device and the shutter mechanism.

3,687,034

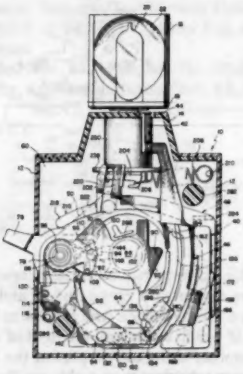
EXPOSURE CONTROL MECHANISM WITH MECHANICAL FLASH SYNCHRONIZATION

Bruce K. Johnson, Andover, Mass., assignor to Polaroid Corporation, Cambridge, Mass.

Filed June 29, 1970, Ser. No. 50,583

Int. Cl. G03b *15/04*

U.S. Cl. 95—11.5 R **28 Claims**



An exposure control mechanism utilizing a singular shutter blade which is drawn by an actuator arm from a blocking position to an unblocking position to initiate an exposure interval. The actuator arm is spring loaded with the depression of a shutter release lever which moves it into engagement with the shutter blade to draw it to its unblocking position. During this movement of the actuator, an impulse actuator is spring loaded and selectively released from an initial position to accelerate along a given rotational path to strike a probe member which is then extended into a percussively ignited flashlamp assembly. The impulse actuator and probe are returned to their initial positions in conjunction with the actuator arm movement of the shutter blade to its unblocking position.

3,687,035

IMAGE MOTION COMPENSATION MEANS FOR CAMERA APPARATUS

Robert A. Morgan, 402 Oak Grove Ave., Menlo Park, and Fred E. Tarver, San Jose, both of Calif., assignors to R. A. Morgan Co., Inc., by said Morgan and Morgan Information Systems, Inc., Palo Alto, Calif., by said Tarver

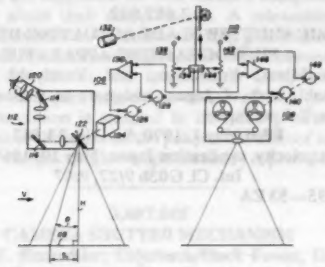
Filed Aug. 11, 1969, Ser. No. 849,049

Int. Cl. G03b *29/00*

U.S. Cl. 95—12.5 **14 Claims**

An image motion compensation system for aerial cameras and the like, comprising an optical V/H meter, the scanning

speed of which is utilized to provide proportional control of the film drive means of the camera apparatus so as to provide automatic image motion control in response to a selected



scanning speed of the V/H meter. The optical V/H meter employs an objective scanning mirror device having a scanning rate which can be selectively varied to cause the photographic image to appear stationary in the image plane thereof.

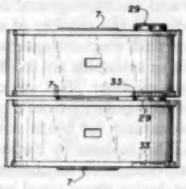
3,687,036

FILM CARTRIDGE

Robert J. Herberger, Rochester, N.Y., assignor to Eastman Kodak Company, Rochester, N.Y.

Int. Cl. G03b *19/04*

U.S. Cl. 95—31 R **5 Claims**



A film cartridge including a compartment having oppositely disposed end walls, one end wall having a protrusion extending therefrom and the other end wall have a recess configured to accommodate the protrusion of an adjacent cartridge to facilitate the compact stacking of the cartridges.

3,687,037

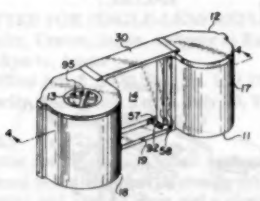
FILM CARTRIDGE AND CAMERA EMPLOYING SAME

Hubert Nerwin, 85 Parkwood Ave., Rochester, N.Y.

Filed April 6, 1970, Ser. No. 25,956

Int. Cl. G03b *19/04*

U.S. Cl. 95—31 R **10 Claims**



A film cartridge includes a wall member having a forwardly facing surface along which a strip of film is movable between a film supply compartment and a film take-up compartment. At opposite sides of the portion of the film located in exposure position forwardly of that flat surface, the wall member defines forwardly extending seating projections which are held in resilient contact with fixed rearwardly facing camera surfaces to position the cartridge in predetermined relation to the camera lens system. A set of guide studs are similarly located to maintain the lateral position of the film. The edges of the exposure portion of the film are over-lapped by stationary rearwardly facing camera surfaces spaced forwardly of the flat cartridge surface by the seating projections to maintain the film exposure area in supported cooperation with that cartridge surface without interfering with longitudinal film movement. A set of positioning pads locates the cartridge vertically in the camera, and one of the guide studs serves the further function of determining the horizontal location of the cartridge in the camera.

3,687,038

VIEWFINDER SYSTEM FOR A SINGLE LENS REFLEX CAMERA

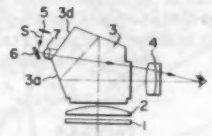
Tadashi Kawakami, Tokyo, Japan, assignor to Nippon Kogaku K.K., Tokyo, Japan

Filed March 31, 1971, Ser. No. 129,797

Claims priority, application Japan, April 28, 1970, 45/40866

Int. Cl. G03b *17/20*

U.S. Cl. 95—42 **4 Claims**



A view finder system for a single lens reflex camera provided with a display member for displaying various required information such as exposure meter needle, f-number scale, shutter speed scale and other characters or index marks. The display member is disposed relative to a penta prism so that a light beam from said display member is totally reflected by one transmitting surface of said penta prism adjacent to a focusing screen disposed therebelow and directed to an ocular disposed behind said penta prism, and an optical reflecting member is interposed between said penta prism and said ocular for reflecting said light beam at least twice to direct it to said ocular, whereby the various required information displayed by said display member can be clearly viewed in the viewfinder's field of view.

3,687,039

MULTI-EXPOSURE DEVICE FOR PHOTOGRAPHIC CAMERAS

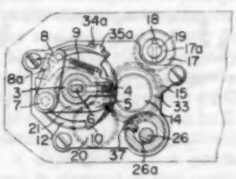
Koichi Furuta, Tokyo, Japan, assignor to Nippon Kogaku K.K., Tokyo, Japan

Filed Oct. 6, 1970, Ser. No. 78,398

Claims priority, application Japan, Oct. 9, 1969, 44/95779

Int. Cl. G03b *19/04*

U.S. Cl. 95—31 AC **4 Claims**



A camera having a shutter release button, a film and shutter winding lever and a self-cocking mechanism including a shaft

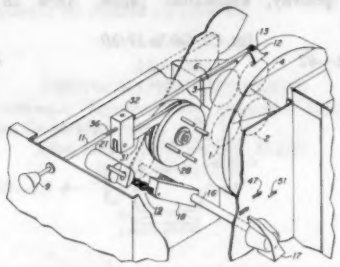
rotatable for charging a shutter, a gear train for advancing a film, a clutch for coupling and decoupling the shaft and gear train, the clutch having a pawl rotatably mounted on the shaft, a cam fixed to the gear train, a pawl being biased against the cam, the pawl and cam being formed to rotate the gear in unison with the shaft in the film advancing direction, the pawl being retractable from the cam to maintain the gear train at rest during rotation of the shaft for multi-exposure operation.

3,687,040

EXPOSURE CONTROL SYSTEM WHICH ELIMINATES DOUBLE EXPOSURES IN A MULTIPLE IMAGE CAMERA

Fredrick W. Macone, Carlisle, and Normand J. La Fortune, Dracut, both of Mass., assignors to Avant Incorporated, Lincoln, Mass.

Filed May 5, 1970, Ser. No. 34,649
Int. Cl. G03b *19/02*
U.S. Cl. 95—36 R **9 Claims**



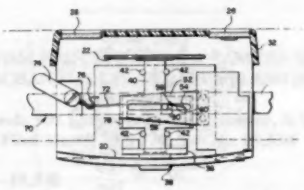
A camera exposure control system for sequentially exposing first and second areas of a photosensitive medium positioned within the imaging plane of a multiple image camera. The exposure control system disclosed herein enables the simultaneous exposure of a plurality of areas of photosensitive film or in an alternate mode of operation utilizes means for sequentially shifting the position of a movable masking member to alternately cover a first lens system upon the actuation of a shutter and thereafter for covering a second lens system upon a second actuation of the shutter. The alternate movement back and forth of the masking member to alternately cover the first and second lens systems is automatic so that inadvertent double exposure of one area of the film is automatically prevented.

3,687,041

MULTIPLE ZONE STEREO RANGEFINDER

Philip R. Norris, North Reading, Mass., assignor to Polaroid Corporation, Cambridge, Mass.

Filed Feb. 26, 1971, Ser. No. 119,268
Int. Cl. G03b *3/00*
U.S. Cl. 95—44 C **13 Claims**



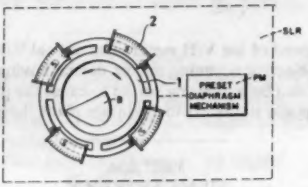
A camera is disclosed incorporating an improved stereoscopic binocular rangefinder. The rangefinder mechanism and its coupling to the camera are constructed so they can be adjusted to accommodate for changes in the objective lens of the camera, e.g., as related to the addition of a close-up attachment to the objective lens.

3,687,042

ELECTRIC SHUTTER BLADE ACTUATING DEVICE FOR A PHOTOGRAPHING APPARATUS

Seiichiro Mizui, Yokohama, and Yoshiyuki Takishima, Kawasaki, both of Japan, assignors to Canon Kabushiki Kaisha, Tokyo, Japan

Filed May 1, 1970, Ser. No. 33,542
Claims priority, application Japan, May 10, 1969, 44/42497
Int. Cl. G03b *9/22, 9/07*
U.S. Cl. 95—53 EA **12 Claims**



In the disclosed electric blade actuating device for a photographing apparatus an electromagnetic mechanism has a blade-actuator frame with at least three magnets, a stationary supporting member and electromagnetic coils or solenoids in numbers corresponding to the number of said magnets, and a switching means for said electromagnetic mechanism. The electromagnetic coils or solenoids are fixedly provided on said stationary supporting member. The switching means is arranged to switch the feed polarity from a power source to the electromagnetic mechanism for blade actuation by rotating the actuator frame. This is done by exciting the electromagnetic coils. The electromagnetic mechanism is arranged on a circumference of the device about equal intervals.

3,687,043

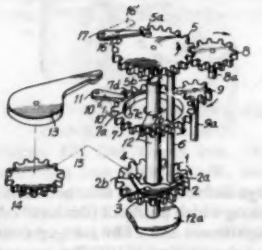
Patent Not Issued For This Number

3,687,044

FOCAL PLANE SHUTTER DEVICE

Koichiro Watanabe, Tokyo, Japan, assignor to Asahi Kogaku Kogyo Kabushiki Kaisha, Tokyo-to, Japan

Filed Jan. 20, 1971, Ser. No. 107,883
Claims priority, application Japan, Jan. 28, 1970, 45/8152
Int. Cl. G03b *9/32*
U.S. Cl. 95—57 **10 Claims**



A focal plane shutter drive for simultaneously cocking and sequentially releasing the leading and trailing curtains of a focal plane shutter. One of a pair of coaxial curtain gears is

formed with an arcuate slot while the other carries a pin received in this slot for engaging an end thereof to provide for simultaneous turning of both gears during cocking of the shutter. A cocking gear is coaxial with the curtain gears and all of the gears are supported for free rotation independently of each other about their common axis. A releasable motion transmission extends between the cocking gear and one of the curtain gears for transmitting motion therebetween during cocking of the shutter, this transmission being interrupted preparatory to sequential release of the curtain gears. This motion transmission is situated in its entirety between the common axis of the gears on the peripheries thereof so that an exceedingly compact, light-weight assembly is provided.

3,687,045

CAMERA SHUTTER MECHANISM

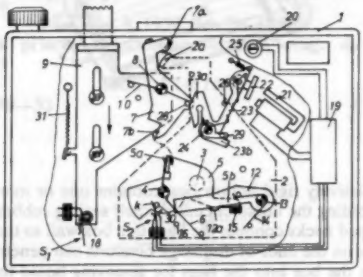
Waldemar T. Rentschler, Calmbach/Black Forest, Germany, assignor to Prontor-Werk Alfred Gauthier, G.m.b.H., Calmbach/Schwarzwald, Germany

Filed Nov. 27, 1970, Ser. No. 93,035

Claims priority, application Germany, Dec. 1, 1969, P 19 60 226.7

Int. Cl. G03b 9/18

U.S. Cl. 95—59 **8 Claims**



There is provided herewith an improved photographic camera having an objective lens with a constant diaphragm aperture. A shutter mechanism comprises a single main shutter blade movable back and forth by an opening and closing impulse over the diaphragm aperture. In conjunction with the main shutter blade there is a cover blade which moves in a plane parallel to the plane of movement of the main shutter blade, both sweeping over the diaphragm aperture. The cover blade is spring biased against the main shutter blade and follows the movement thereof.

3,687,046

LENS SHUTTER FOR SINGLE-LENS REFLEX CAMERA

Katsumi Kaneko, Urawa, Japan, assignor to Kabushiki Kaisha Koparu, Tokyo-to, Japan

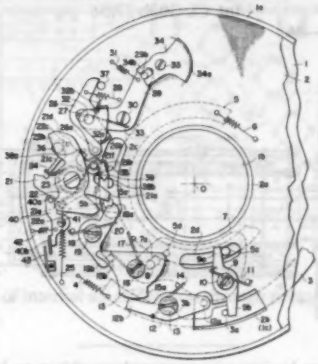
Filed July 2, 1971, Ser. No. 159,181

Claims priority, application Japan, July 10, 1970, 45/68913

Int. Cl. G03b 9/14

U.S. Cl. 95—63 **4 Claims**

A lens shutter for single-lens reflex camera, comprising a sector ring biased in the direction of closing the shutter blades, a shutter opening and closing lever and a closing action lever which are both rotatably mounted coaxially, a spring applied between the shutter opening and closing lever and the closing action lever, a spring for biasing the closing action lever, and a lock lever for locking the shutter opening and closing lever and the closing action lever in their cocked positions, respectively. After the shutter blades are closed first upon release of the shutter mechanism, the sector ring is struck by the shutter opening and closing lever, causing the shutter blades to be opened, and then after the lapse of a predetermined delay time, the sector ring is struck again by the shutter opening and closing lever which is rotated by the closing action lever to thereby close the shutter blades. The shutter opening and closing lever, after its aforesaid action, will assume a position not associated with the sector ring which, in turn, is locked in a position at which the shutter blades are held open. Whereby, a series of opening and closing movements of the shutter blades are accomplished quickly and positively.



3,687,047

INTERCHANGEABLE LENS CAPABLE OF CHANGE OVER BETWEEN AUTOMATIC AND MANUAL STOP OPERATIONS

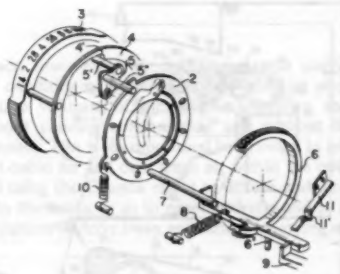
Masaharu Ito, Kawasaki, Japan, assignor to Canon Kabushiki Kaisha, Tokyo, Japan

Filed Aug. 12, 1970, Ser. No. 63,177

Claims priority, application Japan, Aug. 22, 1969, 44/79718

Int. Cl. G03b 9/07

U.S. Cl. 95—64 D **2 Claims**



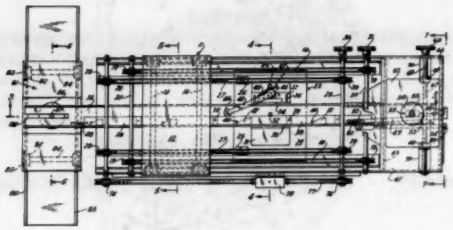
An interchangeable lens capable of change over between automatic and manual diaphragm stop operations includes a diaphragm actuator ring and an automatic diaphragm interlocking member. Said actuator ring is normally urged in stop-down direction and engaged by said interlocking member which normally holds the actuator ring in a fully opened position with the aid of a spring being driven by a stop lever in a camera for automatic aperture stop operation. The interlocking member is displaceable to a position beyond its operating range and is clamped in that position for manual aperture stop operation, whereby the lens can be readily and simply changed over between automatic and manual stop operations.

3,687,048

APPARATUS FOR STEREOSCOPIC PHOTOGRAPHY

Ernst Richter, West Islip, N.Y., assignor to Stereo-Optics, Inc., San Francisco, Calif.

Filed Aug. 6, 1970, Ser. No. 61,717
Int. Cl. G03b 17/56
U.S. Cl. 95—86 6 Claims



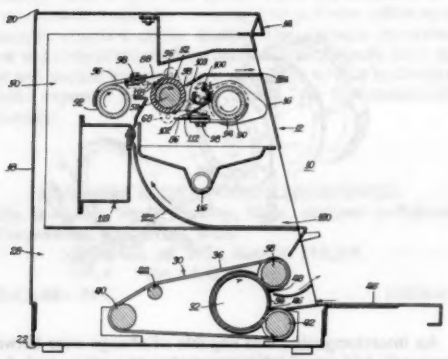
Apparatus having a camera and an object to be photographed in three dimension aligned with the center axis of a rotatable bar with means to focus the object in a straight-on position by moving it along such axis. The rotatable bar is mounted on a pivot carriage which can be moved along the bar until a pivot on such carriage is vertically aligned with a point with respect to the object, thereby determining the pivot of rotation of the bar and automatically fixing the same right and left angle from the position of initial alignment when the bar is rotated. An exposure is then taken from each side to obtain a stereoscopic picture of the object.

3,687,049

LIQUID DEVELOPING APPARATUS

Robert M. Koch, Wheaton; Samuel L. Webb, Lisle, and Dennis E. Toby, Lake Zurich, all of Ill., assignors to Addressograph-Multigraph Corporation, Mount Prospect, Ill.

Filed April 27, 1970, Ser. No. 31,939
Int. Cl. G03d 5/06
U.S. Cl. 95—89 R 18 Claims



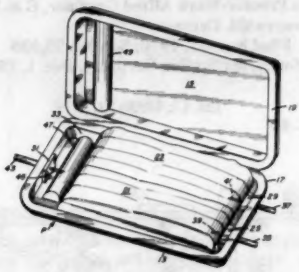
Apparatus for developing diazo-sensitized copy material by the application thereto of a quantity of developer liquid includes an applicator roller to the surface of which there is supplied developer liquid, a wiper member movably mounted for engagement with the roller surface to wipe excess developer liquid therefrom and a pressure applying member movably mounted for engagement with the roller surface to form a developing zone therewith through which sensitized copy material is passed for development. A rotatably cam member and electrical circuit arrangement function in combination to move the wiper and pressure applying member into engagement with the roller surface upon operating the apparatus to an on condition, and out of engagement upon operating the apparatus to an off condition.

3,687,050

PACKAGE FOR DISPENSING AND DISPOSING OF PROCESSING LIQUIDS IN A DEVELOPING APPARATUS

George A. Wilke, Rochester, N.Y., assignor to Eastman Kodak Company, Rochester, N.Y.

Filed Aug. 14, 1970, Ser. No. 63,792
Int. Cl. G03d 3/06
U.S. Cl. 95—89 R 6 Claims



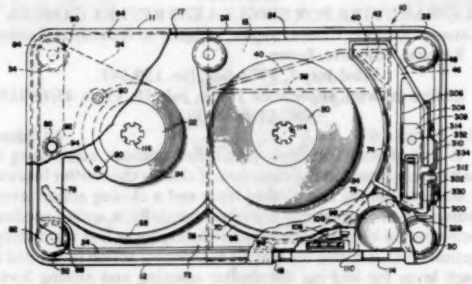
A relatively rigid hollow box contains one or more plastic bags holding the liquid chemicals. Self sealing rubber patches or capped necks connect the bags to a box wall so that hollow needles on the ends of discharge conduits can penetrate from outside the box into the bags for removing liquid therefrom. The wall of the box is also provided with a self sealing patch or a capped neck for penetration by a hollow needle on the end of a waste conduit for return of waste liquid to the space in the box outside of the bags.

3,687,051

SYSTEM FOR RUPTURING POD CONTAINING PROCESSING FLUID FOR PHOTOGRAPHIC MATERIAL

Philip G. Baker, Peabody; Gerald H. Cook, Lynnfield, and Rogers B. Downey, Lexington, all of Mass., assignors to Polaroid Corporation, Cambridge, Mass.

Filed July 3, 1969, Ser. No. 838,783
Int. Cl. G03c 1/72
U.S. Cl. 95—89 R 10 Claims



A system for rupturing a pod having a weakened edge portion and containing processing fluid for photographic material and for expelling the fluid therefrom. The fluid filled pod is

mounted adjacent a support surface and protected by a flexible cover plate. A rigid member is initially disposed between the cover plate and the support surface adjacent the end of the rupturable pod furtherest removed from the pod's weakened portion. Extending along the inside face of the cover plate is a rib which initially presses the section of the pod adjacent thereto against the support plate so that substantially no fluid is disposed within the pod between the rib and the support plate. The cover plate includes access means whereby externally mounted force applying means may be introduced into the space between the cover plate and the support surface to displace the rod across the length of the pod. The cover plate is deflected by the rod during its displacement across the pod and at the same time presses the rod firmly against the pod.

This system can advantageously be employed in a compact multi-purpose film handling cassette adapted to be inserted into a unique processor-projector unit containing the aforementioned force applying means.

3,687,052

ROOM WALL BUILDING ELEMENT INCLUDING A DOOR-FRAME

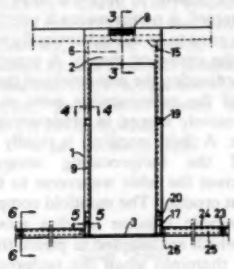
Erik Schonberg, Hasthagsterrassen 3, 134 00 Gustavsberg, Sweden

Filed Aug. 4, 1970, Ser. No. 60,909

Claims priority, application Sweden, Aug. 4, 1969, 10892/69

Int. Cl. F24f *13/06*

U.S. Cl. 98—32 **4 Claims**



A building element for use as a room wall provided with a door frame in which the top component or lintel is formed with first and second openings for connection with first and second air shafts, with the second opening being adapted to communicate with ventilating openings leading to the room and the vertical components or jambs having passages leading to the first opening and ventilating openings, respectively.

3,687,053

VESTIBULE AIR CURTAIN DOOR SYSTEM

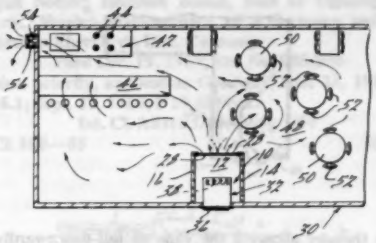
James H. Henson, Brighton, and Artel R. Henson, Pontiac, both of Mich., assignors to Disco Engineering, Inc., Detroit, Mich.

Filed Nov. 23, 1970, Ser. No. 92,054

Int. Cl. F24f *9/00*

U.S. Cl. 98—33 **36 Claims**

An air curtain door system adapted particularly for use in the vestibule and other variable volume pedestrian and other traffic areas of public facilities, such as restaurants, offices and the like, and adapted to utilize fresh outside air to provide a source of heated or otherwise conditioned air for environmental control of internal air circulation through pressurization of the facility.



3,687,054

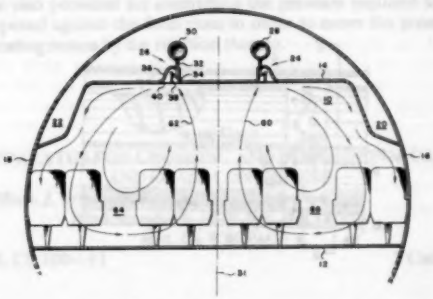
AIR OUTLET APPARATUS

John E. Boberg, Northridge, Calif., assignor to Lockheed Aircraft Corporation, Burbank, Calif.

Filed Nov. 24, 1970, Ser. No. 92,398

Int. Cl. F24f *9/00*

U.S. Cl. 98—33 **17 Claims**



A compact, low-weight air outlet apparatus cooperating with an air conditioning system for wide body jet aircraft to circulate large volumes of air without initiating annoying drafts, without causing condensation and without forming stagnation zones. This is accomplished by drawing in and mixing ambient cabin air and cool fresh air within the outlet apparatus and using the Coanda effect to diffuse and direct the air back into the cabin so as to prevent drafts and to form a circulation pattern to drive away and diffuse annoying smoke.

3,687,055

AIR VANE AND FIRE DAMPER FOR INTEGRATED CEILING SYSTEMS AND THE LIKE

Frank J. Dean, Jr., Kansas City, Mo., and Neil J. Thompson, Palatine, Ill., assignors to Tempmaster Corporation

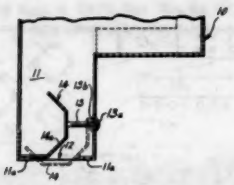
Filed Dec. 15, 1970, Ser. No. 98,386

Int. Cl. F24f *13/08*

U.S. Cl. 98—40 D **10 Claims**

An air vane is inserted in the air passage of an air diffuser and extends longitudinally above the lower portion of the outlet (the inlet if a return air unit) slot. The air vane is supported at its lower surface by resting on a horizontal surface forming one side of the outlet slot of the air passage. One or more pin members may be either fixedly attached to the vane itself or to a side portion of the air passage. This pin member will be constructed of a suitable material, having a low melting point, so

that when a fire occurs in a room area below the ceiling system utilizing the subject air vanes, the pin member will melt and

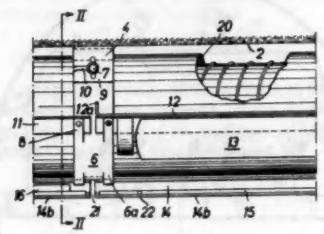


vaporize thereby allowing the vane to fall downwardly and close off the outlet slot thereby providing a fire stop damper.

3,687,056
CEILING STRUCTURE II

Borre Hover, Oslo, Norway, assignor to A/S Norsk Viftefabrikk, Oslo, Norway

Continuation-in-part of Ser. No. 9,992, Feb. 9, 1970. This application Feb. 11, 1971, Ser. No. 114,649
Claims priority, application Norway, March 4, 1970, 759/70
Int. Cl. F24f *13/06*; F21v *29/00*
U.S. Cl. 98—40 DL **13 Claims**



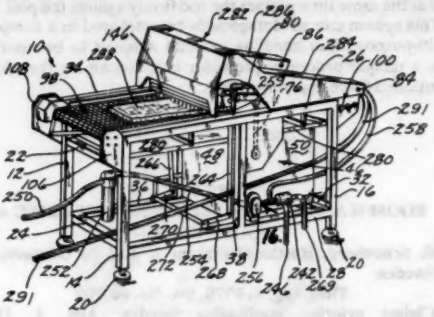
A ceiling construction with air-cooled lighting fixtures and arranged for air supply and/or removal to/from the underlying room according to the invention is comprising a plurality of parallel channel tubes **1** suspended in spaced relation below a ceiling slab **2**. At least some of them serve as ventilation air channels and are connected to a collection or distribution system. The tubes have apertures **18** facing the spaces **17** between said channel tubes. The channel tubes are suspended in separate mountings **3** which are provided with upper support means **11** which support carrier plates **12** arranged between the tubes. Lighting fixtures **13** are fixed to the underside of the carrier plates. The mounting means have also lower support means **14** which, in the areas where the light fixtures are situated, support transparent or translucent optical under plates **15** and in the other areas support other under plates **16**, such as acoustic under plates, cover plates or the like, located below the level of the mentioned apertures **18**. The under plates are arranged or designed in such a way that air current connection (as at **21**) is ensured between the room below and the spaces in which the lighting fixtures are situated. Preferably the tubes have circular cross section and are spiral-coiled made from a strip of sheet material. At least some of the support mountings comprise a two-part stirrup with a top piece **4** designed to be fastened to the underside of a ceiling, a beam or the like, and a bottom piece **6** which can be vertically adjusted in relation to the top piece. The lower part of said bottom piece is adapted to the external cross section shape of the channel tube and being connected at the top to the top piece.

3,687,057
Patent Not Issued For This Number

3,687,058
MACHINE FOR INJECTING FLUIDS INTO MEAT PRODUCTS

Ray T. Townsend, Des Moines, Iowa, assignor to Townsend Engineering Company, Des Moines, Iowa

Filed Feb. 12, 1970, Ser. No. 10,908
Int. Cl. A23b *1/16*
U.S. Cl. 99—257 **13 Claims**



A machine for injecting fluids into meat products comprising a table having a conveyor means movably mounted thereon adapted to convey the meat product from one end to the other. A pair of reciprocating arms are pivotally connected at one end thereof to opposite sides of the table adjacent one end thereof. A power means is provided for causing the reciprocating arms to be moved upwardly and downwardly with respect to the conveyor means. A power means is also provided for coordinating the movement of the conveyor with the movement of the reciprocating arms so that the meat product is successively moved in predetermined increments on the conveyor. A fluid manifold is rigidly secured to the other ends of the reciprocating arms and extends therebetween across the table transverse to the direction of travel of the meat product. The manifold comprises a plurality of vertically movable injector needles mounted in bores formed therein which are adapted to pierce the meat product and inject fluid thereinto when the reciprocating arms are moved downwardly with respect to the conveyor. The manifold has a manifold cover provided thereon which is in communication with a source of the fluid to be injected. Valving and actuating means therefor is provided which is adapted to cause the fluid to be discharged from the injector needles only when the manifold and needles have been lowered with respect to the meat product by the reciprocating arms thereby conserving the fluid. The design of the injector needles is such that the crystallization of salts thereon is prevented thereby preventing plugging of the needles. The bore extending through the injector needles is also designed so as to prevent plugging thereof. An accumulator means is also disclosed to provide a greater volume of fluid to the injector needles in an instantaneous fashion.

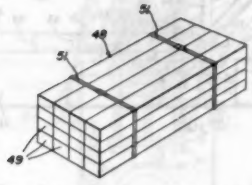
3,687,059
STRAPPING MACHINE

Robert F. Plattner, Chicago Heights; Frank C. Weller, Chicago, and Edward Staron, Evergreen Park, all of Ill., assignors to Interlake, Inc., Chicago, Ill.

Filed Oct. 5, 1970, Ser. No. 78,008
Int. Cl. B65b *13/34*
U.S. Cl. 100—4 **39 Claims**

A machine for tensioning a strap around an object includes a pair of toothed gripping jaws movable by first drive means

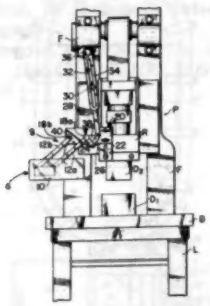
into and out of holding engagement with the strap in directions substantially normal thereto to prevent scoring thereof, the gripping jaws being pivotally movable to a releasing position for accommodating removal of the strap therefrom, sealing jaws and a seal feed member respectively movable by second and third drive means alternately into ea sealing region, the seal feed member in the sealing region positioning a seal therein and guiding the passage of the strap therethrough, the sealing jaws in the sealing region sequentially deforming the seal into partial sealing and full sealing engagement with the strap, straightening means movable by fourth drive means into and out of straightening engagement with the supply portion of the strap, and control circuitry for controlling the operation of the several drive means.



3,687,060
SAFETY GATE FOR PRESSES

Masahiro Komori, and Takehiko Komori, both of 2-3-16 Kyobashi, Chuo-ku, Tokyo, Japan, assignors to said Masahiro Komori, by said Takehiko Komori

Filed Dec. 3, 1970, Ser. No. 94,699
Claims priority, application Japan, Dec. 18, 1969, 44/119693; Jan. 17, 1970, 45/4265
Int. Cl. B30b *15/00*
U.S. Cl. 100—53 7 Claims

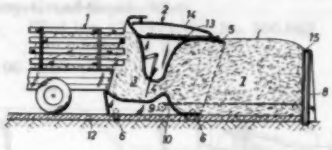


A press having a ram adapted to move vertically toward a die surface, including a safety gate automatically swingable to move in front of the die facade. The gate is mounted at the end of a pair of parallel arms pivotally connected to the ram so that the arms and gate are conjointly movable in the vertical direction with the ram. The arms are simultaneously linked to the frame of the press by a crank lever system so that the downward vertical movement of the ram swings the gate in front of the die facade in advance of the closing of the ram.

3,687,061
DEVICE FOR BUILDING UP AND REMOVING A FLAT MASS OF GOODS

Alfred Eggenmuller, Ulm; Lorenz Scherer, Oberelchingen; Eugen Notter; Heinrich Bellan, both of Thalfingen, and Werner Wagler, Wullenstetten, all of Germany, assignors to Gebruder Eberhardt, Ulm, Germany

Filed Dec. 19, 1969, Ser. No. 886,800
Claims priority, application Germany, Dec. 21, 1968, P 18 16 405.1; Sept. 27, 1969, P 19 48 931.7
Int. Cl. A01f *25/16*; B65g *3/04*
U.S. Cl. 100—65 22 Claims

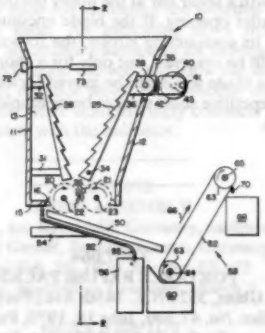


The apparatus aspects of the invention consists of packing means mounted at the discharge end of a harvesting wagon particularly one having a movable bottom. Such packing means may consist of such pressure creating means as multiple screws, oscillating vanes or rotary paddles for discharging the crop materials against the mass of animal food being built and imposing pressure thereon. Suitably adjustable braking means are also provided for controlling the pressure required to be imposed against the food mass in order to move the pressure creating means by the reaction thereto.

3,687,062
APPARATUS FOR CRUSHING AND DISPOSING OF CANS AND GLASS CONTAINERS

William J. Frank, 45 Exchange St., Rochester, N.Y.

Filed March 13, 1970, Ser. No. 19,222
Int. Cl. B30b *9/00*
U.S. Cl. 100—91 2 Claims



Discarded glass containers and cans are dumped into a hopper containing a crushing mechanism which flattens the cans and pulverizes the glass containers. A vibrating grid beneath the crushing mechanism causes the pulverized glass pieces to drop into a first container, but guides the flattened cans onto a nearly vertical conveyor, by which magnetizable cans are conveyed upwardly to a second container, while non-magnetizable cans fall by gravity to a third container.

3,687,063

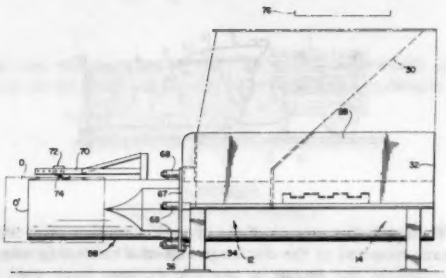
APPARATUS FOR COMPACTING MATERIAL INTO DRUMS OR BAGS

Milton Clar, Bethesda, Md., assignor to Auto Pak Company, Bladensburg, Md.

Continuation-in-part of Ser. No. 33,284, April 30, 1970, Pat. No. 3,614,925, which is a continuation-in-part of Ser. No. 727,845, May 9, 1968, Pat. No. 3,541,949. This application April 12, 1971, Ser. No. 132,957

Int. Cl. B65b *63/02*

U.S. Cl. 100—98 **11 Claims**



Compacting apparatus having a material receiver chamber with an inlet opening at the top and an outlet opening at the front, the top and bottom edges of the outlet opening being defined by a circular arcs merging at opposite ends with straight segments which form square corners at the side extremities of the outlet opening. A compaction blade of cross-section substantially the same as the outlet opening, and the cross-section of the lower portion of the material receiver chamber, moves through the chamber and forces material through the outlet opening into a snout. The snout comprises, in succession, a portion of cross-section substantially the same as the receiver chamber outlet opening, a tapered transition portion, and a portion of circular cross-section which diverges outwardly toward a circular snout outlet opening. A receptacle received over the snout is moved along the snout as material is supplied thereto. The blade has cutting teeth which cooperate with a shear bar at the upper portion of the receiver chamber outlet opening. If the blade encounters an obstruction during its compacting stroke, the forward movement of the blade will be reversed, but only for a short period of time, and then the blade will again be moved forwardly into the obstruction, repetitive short strokes being employed to break the obstruction.

3,687,064

PORTABLE REFUSE PACKER

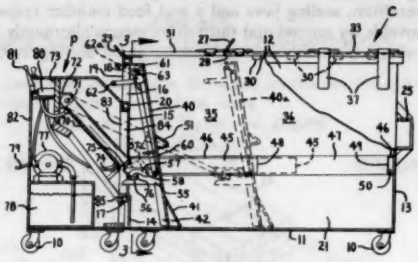
Richard G. Glanz, 3529 N.E. 145th Ave., Portland, Oreg.

Division of Ser. No. 47,300, June 18, 1970, Pat. No. 3,625,140. This application Sept. 2, 1971, Ser. No. 177,306

Int. Cl. B30b *15/06*

U.S. Cl. 100—100 **2 Claims**

A wheeled container having a pair of hinged lids has a packer plate mounted for sliding movement within the container. A wheeled power unit has a hydraulic cylinder with a piston rod arranged for detachable connection with the packer plate in the container. Refuse deposited in the container is crushed and compressed to a small volume by the packer plate and when the container is full the power unit is connected to an empty container. Then the filled container is wheeled to a loading area for garbage trucks and its contents dumped into a truck. Thus, the packet is brought to the refuse



instead of following the conventional practice of transporting the refuse to the packer.

3,687,065

Patent Not Issued For This Number

3,687,066

STANDS FOR PRESSES

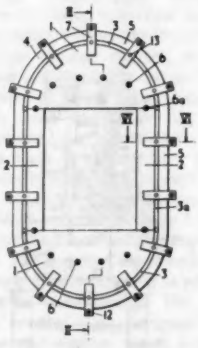
Baltzar Carl Von Platen; Finn Lennart Jonsson, and Sten Trolle, all of Ystad, Sweden, assignors to Etablissement Radiator, Vaduz, Liechtenstein

Filed Sept. 15, 1970, Ser. No. 72,358

Claims priority, application Sweden, Sept. 16, 1969, 12691/69

Int. Cl. B30b *1/00*

U.S. Cl. 100—214 **11 Claims**



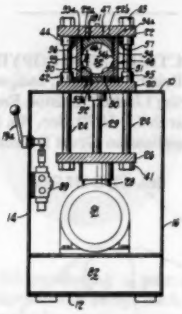
This invention relates to stands for high pressure presses. Such presses are often of a type including a pair of yokes, separated by a pair of uprights and surrounded by a girdle built up from prestressed steel strip. In order to reduce the piece weight and increase the strength of such presses, it is now proposed to build up the yokes, and preferably also the uprights, from sections arranged in face to face relationship. Each section is similar in shape to its fellows and the sections may be bolted together in closely packed or spaced face to face relationship.

3,687,067

FOOD PRESS

Louis A. Bettcher, Amherst, Ohio, assignor to Bettcher Industries, Inc., Vermilion, Ohio

Filed Nov. 20, 1969, Ser. No. 878,439
Int. Cl. B30b *15/32*
U.S. Cl. 100—218 9 Claims



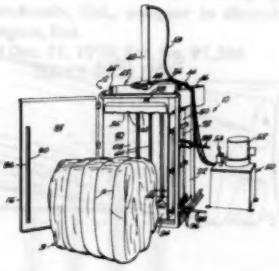
A press for shaping comestible products, such as meat and the like, in a tubular aperture of uniform cross section with a ram reciprocable therein. The aperture is formed by channel shaped lower die-forming means and a movable upper die partially receivable therein. Abutting surfaces limit movement of the upper die into the lower die-forming means to maintain a longitudinal opening between otherwise abuttable surfaces. Also, this opening plus a side clearance between the lower die-forming means and the portion of the upper die received therein, provides an escape passageway for air entrapped in the aperture when a product is compressed. A fluid actuator of the cylinder and piston type carries the ram on a reciprocable piston rod and is constructed so that the portion of the rod that extends into the tubular aperture is not drawn into the actuating cylinder.

3,687,068

BALING PRESS BALE RELEASING MEANS

Anthony Loughran, 20 Springbank Drive, Farsley, Pudsey, Yorkshire, England

Filed Jan. 12, 1970, Ser. No. 2,298
Int. Cl. B30b *1/32, 7/00*
U.S. Cl. 100—255 7 Claims



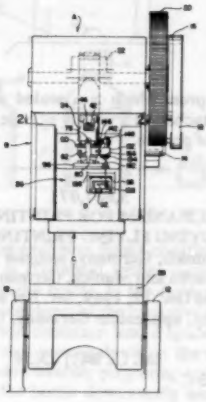
An improvement invention incorporated in a baling press having a press box defining a generally rectangular bale pressing chamber, a press platen vertically reciprocatingly operative in the upper interior of the bale pressing chamber and having a door or front wall of the press box hingedly operable in horizontal swinging movement for access into the bale pressing chamber. The improvement includes providing means for articulatingly interconnecting a sidewall of the press box for freeing the bale of compacted waste material from the press box after the bale is formed, and includes latch means for maintaining the front wall and sidewall in right angular latched configuration while the bale is being formed.

3,687,069

SHUT HEIGHT COUNTER DRIVE FOR PRESSES

Robert A. Helrigel, and Roderick K. Ward, both of Hastings, Mich., assignors to Gulf & Western Industrial Products Company, Grand Rapids, Mich.

Filed Jan. 13, 1971, Ser. No. 106,062
Int. Cl. B30b *5/00*
U.S. Cl. 100—257 8 Claims



A press having a frame includes a slide reciprocatingly mounted on the frame for cooperation with the bed to perform work on workpieces. A drive means for reciprocating the slide is connected thereto by adjustable connection means for adjustable movement of the slide toward and away from the bed to vary the shut height. A variable indicating means is mounted on the slide for indicating the adjusted shut height position of the slide. An indicating drive mechanism is mounted on the adjustable connection for driving the indicator to vary the indication thereon and show the adjusted shut height position of the slide when the adjustable connection is adjusted. A flexible drive shaft drivingly connects the indicating drive mechanism with the indicator.

3,687,070

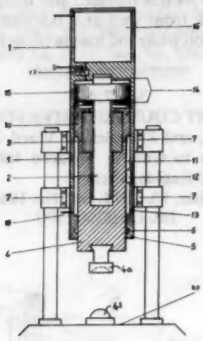
PRESS ASSEMBLY

Helmut Dischler, am Kreuzfeld, Germany, assignor to Becorit Grubenanskan GmbH, Recklinghausen, Germany

Filed Feb. 20, 1970, Ser. No. 13,102
Claims priority, application Germany, March 1, 1969, P 19 10 508.9
Int. Cl. B30b *1/18*
U.S. Cl. 100—271 10 Claims

A press of the type wherein energy is stored in a rotating fly-wheel during the working stroke and released at the end of the stroke to perform work on a workpiece has a cylindrical housing acting as a drive cylinder for the press and also as a guide for a support adapted to carry a movable press tool. A nut and screwed spindle cause rotation of the fly-wheel and this nut and screwed spindle are also in the housing. The press is pneumatically operated for preference, with the return stroke by spring and/or pneumatic means. The support guide has a sealing ring which seals an annular lubricating oil chamber

between the housing and the support. An oil mist can be injected into the compressed air used for the drive cylinder. The invention is particularly concerned with the operating as-



sembly for the press which is a sealed well lubricated unit which can be attached to a variety of base assemblies to form different forms of presses.

3,687,071

TIMING MECHANISM FOR PRINTING APPARATUS EMPLOYING FLYING PRINTING ACTION

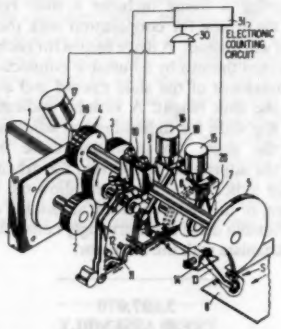
Adam Kling, Munich, Germany, assignor to Siemens Aktiengesellschaft, Berlin and Munich, Germany

Filed Dec. 12, 1969, Ser. No. 884,589

Claims priority, application Germany, Dec. 20, 1968, P 18 16 076.4

Int. Cl. B41j *23/34*

U.S. Cl. 101—93 C **6 Claims**



A timing mechanism for printing apparatus utilizing a uniformly rotating type carrier provided with type characters arranged on the circumference thereof, against which a recording carrier is struck at a selected time by an impact element to effect the desired printing. For the determination of operating time points of control elements of the mechanism in sequence with the phase position of means which determines the time point of printing impact and thus corresponds to a time raster. The time raster comprises a means for scanning the phase position of the respective individual divisions of such time raster and a means is provided for scanning the phase position of a predetermined starting position of the type carrier. The means for forming the mechanical time raster is mounted on a shaft spaced from the type carrier shaft and carrying an additional rotatable timing member having a number of timing positions corresponding to the smallest whole number of revolutions of the type carrier including a whole number of revolutions of such rotatable timing member. Means revolving at the same angular velocity as the type carrier is cooperable with said rotatable timing member and permits the evaluation exclusively of one timing position thereof, corresponding with the starting point of the timing member during a revolution of the type carrier, and generates a synchronizing pulse.

3,687,072

ELECTROSTATIC COPYING

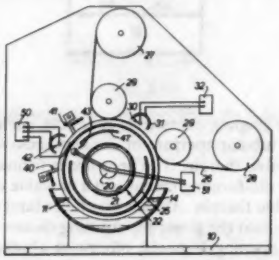
Michael Aren Pym, Bristol, England, assignor to Masson Scott Thrissell Engineering Limited, Bristol, England

Filed March 12, 1970, Ser. No. 19,031

Claims priority, application Great Britain, March 12, 1969, 12,904/69

Int. Cl. B41f *9/00*

U.S. Cl. 101—153 **10 Claims**



A method and apparatus for printing or copying, using a gravure cylinder and a controlled electrostatic field for governing the movement of ink from the gravure cells. The control of the field is performed by applying controlled illumination onto a photo-conductive material below or within the cells, or the ink or ink particles may itself by photo-conductive.

3,687,073

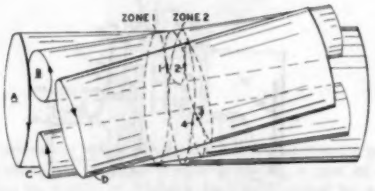
INK DISTRIBUTING MEANS COMPRISING A BUNDLE OF SKEWED ROLLERS

Henry Harrison, Locust Valley, N.Y., assignor to Holm Instrument Co., Inc., Glen Head, N.Y.

Filed July 16, 1970, Ser. No. 55,496

Int. Cl. B41f *1/46, 31/41*

U.S. Cl. 101—350 **3 Claims**



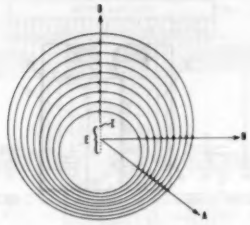
Ink distributing means for a printing press comprising a bundle of rollers, each contacting two other rollers. The axes of said rollers are displaced to form a twisted bundle. The surfaces of two of the rollers are elastic to accommodate the displacements of the axes and make good contact along the lengths of said rollers.

3,687,074

PULSE PRODUCING ASSEMBLY

Alday B. Andrews, Woodbury, N.J., and David L. Coursen, Newark, Del., assignors to E. I. du Pont de Nemours and Company, Wilmington, Del.

Filed Aug. 24, 1962, Ser. No. 219,340
Int. Cl. F42d 1/04, 3/06
U.S. Cl. 102—22 10 Claims



1. An assembly for producing a pair of pressure pulse sequences which comprises two arrays each having

a. a plurality of explosive elements arranged in a straight line, said explosive elements being equally spaced from each other a distance at least sufficient to prevent detonation from propagating between said elements by influence,

b. detonation-transmitting means connecting the said explosive elements in sequence and being adapted to provide identical time intervals between the detonation of successive elements, and

c. initiating means in initiating relationship with one terminal explosive element in said straight line, both of said arrays having the same spacing between said explosive elements and essentially the same number of said explosive elements, and said detonation-transmitting means providing the same time interval between the detonation of successive elements in both of said arrays, said arrays being so disposed one to the other

1. that the straight line formed by the first array is parallel to a line parallel to the straight line formed by the second array and that the line formed by the first array and the line formed by the second array lie on opposite sides of a plane passing between them and normal to them, and

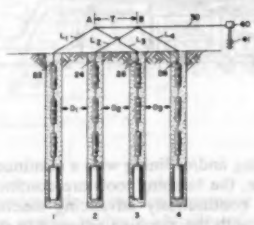
2. that said terminal explosive elements, one from each array, in initiating relationship with said initiating means are substantially equally spaced from the geometric center of said assembly.

3,687,075

MODIFIED PRESPLITTING TECHNIQUE

Fred A. Fritz, Hockessin, Del., assignor to Hercules Incorporated, Wilmington, Del.

Filed Dec. 11, 1970, Ser. No. 97,206
Int. Cl. F42d 1/06
U.S. Cl. 102—23 6 Claims



A presplitting method is provided in which the blasting agents in alternate holes and interjacent holes of a blasting hole array are connected together to form two separate blasting circuits. The blasting charges in each blasting circuit are detonated simultaneously with a preestablished interval between blasting of the charges in each circuit. The combination of oppositely directed forces resulting from detonation of the blasting charge in two alternate holes causes compressive stress at an interjacent hole at the time of detonation of a blasting charge in the interjacent hole resulting in better presplitting with reduced noise and vibration.

3,687,076

FIELD SENSITIZED EXPLOSIVE PACKAGE

James E. Friant, Renton; Daniel E. Pawlak, Redmond, and John W. Goode, Mercer Island, all of Wash., assignors to Explosives Corporation of America, Issaquah, Wash.

Filed Dec. 21, 1970, Ser. No. 100,012
Int. Cl. F42b 3/00
U.S. Cl. 102—24 16 Claims

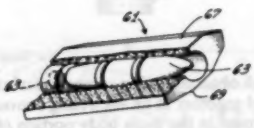
An intrinsically non-explosive liquid constituent of an explosive composition is contained within a can. The can is located inside of a plastic bottle. In the field an intrinsically non-explosive solid constituent of the explosive composition is poured from a separate container into a space in the bottle above the cam. The user presses down on the capped top of the bottle to move a downwardly projecting cutter carried by an upper portion of the bottle downwardly and through the top of the can. Following cutting the bottle is turned upside down and/or shaken to cause a mixing of the two constituents of the explosive composition. The resulting explosive is a liquid which can be poured from the bottle and then detonated by a conventional detonator, or detonated while still in the bottle.

3,687,077

FULLY TELESCOPED CASELESS CARTRIDGE

Morris Goldin, Orange, Calif., assignor to Hughes Tool Co., Aircraft Division, Culver City, Calif.

Filed Jan. 22, 1970, Ser. No. 5,031
Int. Cl. F42b 5/18, 9/16
U.S. Cl. 102—40 2 Claims

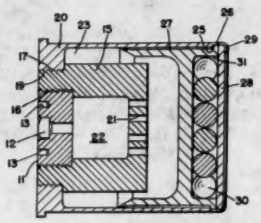


An ammunition cartridge comprising a projectile which is fully telescoped within a sleeve of gunpowder. At the trailing edge of the projectile, and within the sleeve, a primer cap is positioned for containment of a primer charge which initiates combustion of the gunpowder sleeve. If desired, a casing of any suitable material may be provided for certain applications.

3,687,078
AMMUNITION ROUND

Walter A. Gadomski, Delran, N.J., and Bennedetto A. Marziano, Havertown, Pa., assignors to The United States of America as represented by the Secretary of the Army

Filed March 31, 1970, Ser. No. 24,249
Int. Cl. F42b 7/02
U.S. Cl. 102—42 C 1 Claim



An ammunition round which incorporates a high-low pressure interior ballistics system in a molded plastic case. The round lends itself to more efficient production in that it is inexpensive to produce the lightweight case and assemble the finished round.

3,687,079
SECTIONED OBTURATING RING

John A. Scollins, Dover, N.J., assignor to The United States of America as represented by the Secretary of the Army

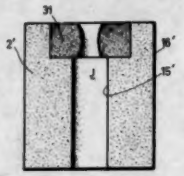
Filed Nov. 20, 1970, Ser. No. 91,424
Int. Cl. F42b 13/22, 31/00
U.S. Cl. 102—49.2 4 Claims

A mortar shell obturating ring comprised of at least two ring segments joined together in an encircling course and received in a groove formed in the main body portion of the shell, the ends of the ring segments being provided with complementally-shaped end sections to permit interlocking interengagement of the ring segments to hold the ring structure securely on the shell before and during firing of the mortar. When the mortar is fired, the obturating ring expands substantially uniformly radially and engages the mortar tube bore to prevent escape of propellant gas around the body of the mortar shell thereby increasing the force with which the shell is propelled from the mortar tube.

3,687,080
GAS GENERATOR AND TUBULAR SOLID CHARGE CONSTRUCTION THEREFORE

Heinrich Hofmann, Grobenzell, Germany, assignor to Messerschmitt-Belkow GmbH, Ottobrunn bei Munich, Germany

Filed March 13, 1969, Ser. No. 806,898
Int. Cl. F42b 1/02
U.S. Cl. 102—101 6 Claims

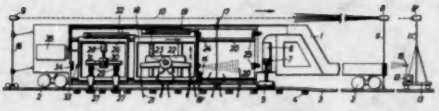


A device for generating gases such as a combustion chamber of a rocket engine includes a solid fuel propellant in the form of a substantially cylindrical hollow main charge having a central bore therethrough and located within the combustion chamber at a spaced location from the interior walls thereof and between a detonating charge and a priming charge. The end of the main charge facing the detonating charge is located adjacent an outlet for the combustion chamber and it is formed in a manner to ensure that some of the ignition and combustion gases which are formed by ignition of the center of the main charge will flow downwardly through the opposite end of the main charge past the priming charge and around the outside of the main charge to cause and maintain ignition of this outside portion of the main charge. The remaining portion of the gases will flow directly from the end of the charge adjacent the detonator to the outlet. To accomplish the desired flow conditions, the main charge itself is formed with a total or partial constriction or nozzle portion at its end which is adjacent the combustion chamber outlet.

3,687,081
METHOD OF CONTINUOUSLY CORRECTING A TRACK POSITION

Franz Plasser, and Josef Theurer, both of Johannesgasse #3, A1010 Vienna, Austria

Filed June 22, 1970, Ser. No. 48,127
Claims priority, application Austria, July 24, 1970, A 7175/69
Int. Cl. E01b 27/17
U.S. Cl. 104—12 7 Claims



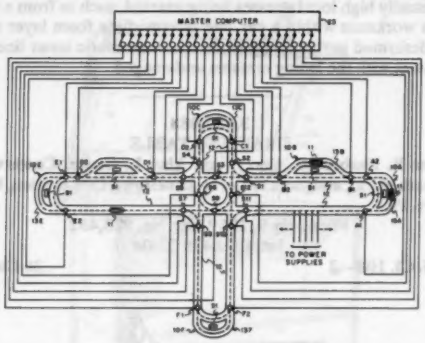
In track leveling and/or lining with a continuously advancing track tamper, the tamping tools are continuously moved relative to the continuously advancing machine frame in synchronization with the machine advance in such a manner that the tamping tools are held in respective cribs while they tamp the ballast.

3,687,082

AUTOMATIC ELECTRIC POWER SUPPLY AND SPEED CONTROL SYSTEM FOR AUTOMATED DRIVERLESS VEHICLES

Howard B. Burke, Jr., Danvers, Mass., assignor to Avco Corporation, Cincinnati, Ohio

Filed Sept. 10, 1970, Ser. No. 70,953
Int. Cl. B60l 9/30, 15/02
U.S. Cl. 104—152 11 Claims



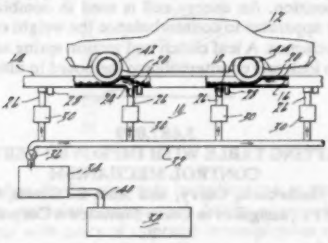
A system for supplying electric power to and automatically controlling the speed of driverless, electrically driven, wheeled vehicles on a guide way. The system includes a power distributing track divided into a plurality of power segments and a plurality of electrical power sources each cyclically operated at different frequencies coupled to different predetermined power segments of the track to create a series of travelling waves, each at a different frequency, in the segmented track. A vehicle including an AC induction driving motor coupled to one power segment of the track receives electrical energy at the particular frequency appearing at a particular moment at a particular power segment. The induction motor in the vehicle continues to receive that particular frequency and, hence, maintain a constant torque so long as the vehicle continues to travel along the track at the desired rate of speed. Should the speed of the vehicle exceed or drop below the desired rate of speed, the induction motor will receive a preceding or succeeding travelling wave of such frequency as to compensate for the increase or decrease in speed thereby causing the induction motor to maintain the desired vehicle speed along the track.

3,687,083

CONVEYING SYSTEMS FOR AUTOMOBILES AND THE LIKE

Ced F. Brown, Redford, Mich., assignor to Mike Torosian, Detroit, Mich., a part interest

Filed Nov. 23, 1970, Ser. No. 92,053
Int. Cl. B61b 3/00
U.S. Cl. 104—155 21 Claims



A system particularly suited for conveying automobiles in automated car washes having a plurality of expansible fluid conduits sequentially positioned along a path which are adapted to receive fluid under pressure. Fluid pressure may be selectedly supplied to the fluid conduits in response to the location of the automobile wheel on the conduit to establish a conveying force acting on the wheel by expansion of the fluid conduit. For example, this may be accomplished by a pressure sensitive valve or a valve operated by a mechanical position sensor. In the former system, a sensing fluid flow is established through the fluid which is restricted when a wheel of the automobile is positioned on the conduit to create a pressure increase upstream of the restriction which is transmitted to the pressure sensitive valve for opening thereof to supply full operational fluid flow to the conduit. In the latter system, an automobile engaging member may be pivotally mounted and operatively connected to a supply valve to operate the valve upon pivotal movement of the engaging member.

3,687,084

ARTICULATED CAR TRAIN

Walter E. O'Leary, Creve Coeur, and Asa Franklin Charles, St. Charles, both of Mo., assignors to ACF Industries, Incorporated, New York, N.Y.

Filed July 17, 1969, Ser. No. 842,584
Int. Cl. B61d 15/00; B61f 3/12, 5/16
U.S. Cl. 105—4 R 2 Claims

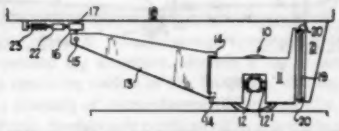
A unit train having a plurality of articulated cars for transporting one commodity or lading in one direction of travel between two geographical areas, and a different lading in the return opposite direction of travel. Alternate freight cars of one type, such as hopper cars, are transported in an unloaded condition in one direction of travel and are transported in a loaded condition in the return opposite direction of travel. Intervening freight cars such as flat cars, are transported in a loaded condition when the alternate cars are in unloaded condition, and are transported in an unloaded condition when the alternate cars are in loaded condition. The articulated cars have common trucks between adjacent ends of all the cars in the unit train to support the ends thereon. The trucks have a load capacity adequate to support one of the supported cars in fully loaded condition but inadequate to support both of the supported cars in loaded condition.

3,687,085

LATERAL MOTION TRUCK

Michael Newman, and David Boocock, both of c/o British Railways Board 222 Marylebone Rd., Derby, N.W. 1, England

Filed Oct. 5, 1970, Ser. No. 77,832
Claims priority, application Great Britain, Oct. 13, 1969, 50261/69
Int. Cl. B61f 3/12, 5/38, 13/00
U.S. Cl. 105—171 19 Claims



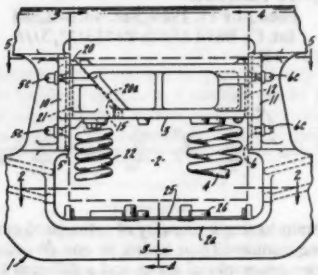
A railway vehicle including at least one wheelset connected to a vehicle body by way of a lateral suspension arranged to allow said wheelset and its supporting structure to yaw relative to said body, the suspension including a pair of parallel load bearing arms extending longitudinally of the vehicle pivotally connected at one end to the wheelset supporting structure and

at the other end to the ends of a transverse member secured to said vehicle body so as to be free to yaw relative thereto, the said arms together with the wheelset and the transverse member forming in plan view a variable parallelogram linkage permitting lateral and yawing movement of the wheelset and its supporting structure relative to the vehicle body.

3,687,086
DAMPENED RAILWAY TRUCK BOLSTER

Franklin D. Barber, Flossmoor, Ill., assignor to Standard Car Truck Company, Chicago, Ill.

Continuation-in-part of Ser. No. 83,875, Oct. 26, 1970, abandoned. This application Feb. 4, 1971, Ser. No. 112,711
Int. Cl. B61f 5/06, 5/12; F16f 1/06
U.S. Cl. 105—197 DB 2 Claims

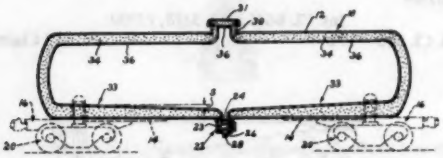


A dampened railway truck bolster and side frame assembly with wedge means on one side of the bolster and wear plates on the other to facilitate maintenance of squareness in the truck.

3,687,087
INSULATING STRUCTURE FOR INTERIOR OF RAILWAY FREIGHT CARS

Frank R. Yurkoski, Bridgeton; Edward L. Coyle, St. Charles; Robert F. Needham, St. Charles, and Dallas W. Rollins, St. Charles, all of Mo., assignors to ACF Industries, Incorporated, New York, N.Y.

Filed April 13, 1970, Ser. No. 27,612
Int. Cl. B61d 27/00
U.S. Cl. 105—355 9 Claims

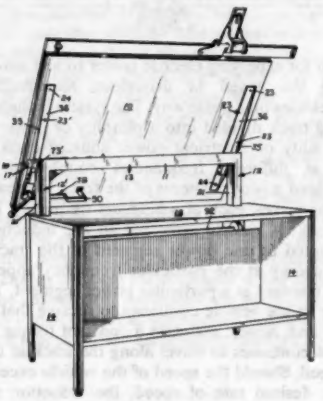


A resilient insulating structure on the interior surface of a railway freight car body in contact with lading carried by the car and supporting at least a substantial portion of the lading carried by the car. The resilient insulating structure comprises a layer of polyurethane foam material having its outer surface secured to the inner surface of the metallic car body and an elastomeric inner liner secured to the inner surface of the polyurethane foam material. The polyurethane foam material forms an intermediate cushioning layer for the elastomeric inner liner and is of a thickness at least around 1 inch and may be as great as around 8 inches. The elastomeric inner liner is less than around ⅛ inch thickness and has a stiffness less than the stiffness of the foam material. Some of the energy created by forces exerted by the lading against the resilient insulating structure is dissipated by the deformation of the insulating structure with the remainder of the energy being transmitted to the railway car body through the insulating structure. Upon unusually high local stresses being exerted, such as from a tool or a workman within a car, the intermediate foam layer may be deformed permanently while the elastomeric inner liner in contact with the lading remains undamaged.

3,687,088
DRAFTING TABLE

Gene B. Hasbrouck, Corry, and Alan L. Green, Centerville, both of Pa., assignors to Corry Jamestown Corporation, Corry, Pa.

Filed May 9, 1969, Ser. No. 823,452
Int. Cl. A47b 27/04
U.S. Cl. 108—2 26 Claims



A drafting table having a tilting board, supported on a desk by columns that are adjustable vertically on the desk. The board may be tilted and locked in any angular position on the upper ends of the columns. A first locking mechanism is provided to lock the columns in any selected vertical position and a second locking mechanism is provided to lock the board at any selected angular position on the columns. The first and second locking mechanisms are so arranged that a single handle actuates both by an improved locking arrangement. The single handle unlocks the angular movement of the board when the handle is moved to a first position and relocks the board and unlocks the columns when the handle is moved to a second position. An energy cell is used in combination with the other apparatus to counterbalance the weight of the board and the columns. A leaf clutch and torsion spring arrangement is used to lock and counterbalance the board in tilting.

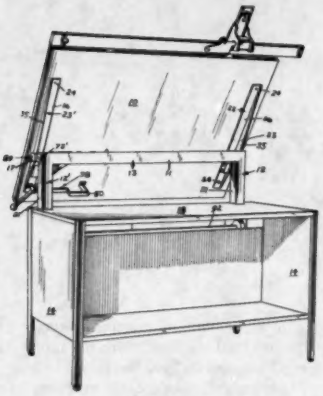
3,687,089
DRAFTING TABLE WITH IMPROVED VERTICAL CONTROL MECHANISM

Gene B. Hasbrouck, Corry, and Alan L. Green, Centerville, both of Pa., assignors to Corry Jamestown Corporation, Corry, Pa.

Filed May 9, 1969, Ser. No. 823,447
Int. Cl. A47b 27/18
U.S. Cl. 108—2 9 Claims

A drafting table is disclosed in the specification that has a drafting board supported on a desk for vertical movement.

The board is supported on a yoke having vertically extending legs connected to a counterbalance and locking mechanism. The locking mechanism is made up of two upwardly extending rods each fixed to a side of the table adjacent one of the legs on the yoke. Each leg has a helical spring which slides on one of the rods and may be moved relative to the rod to lock the

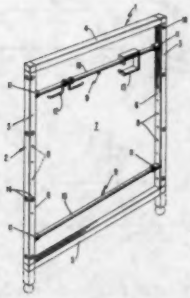


leg from sliding, thereby locking the board in the desired vertical position. A counterbalance mechanism made up of two energy cells is supported at each side of the table and interconnected by two concentric tubes which restrain the two energy cells to exert a force on the legs of the yoke which will move the yoke in translation.

3,687,090
MERCHANDISE DISPLAY DEVICE

Louise Butler, 16 E. 92nd St., New York, N.Y.; Lloyd Dobkin, 80 Bennet Place, Amityville, N.Y., and J. Robert Ellner, 500 E. 83rd St., New York, N.Y.

Filed Sept. 30, 1970, Ser. No. 76,785
Int. Cl. A47f 5/12
U.S. Cl. 108—6 **11 Claims**

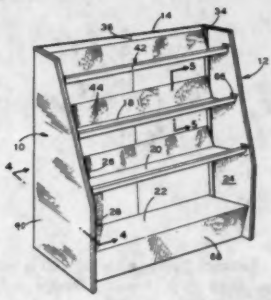


Merchandise display assembly including one or more interconnectable modular frames, each having opposed support wall portions with pairs of opposed inconspicuous mounting apertures at a plurality of selective complemental intervals therealong, multifunctional merchandise display retaining means spanning a display space between such opposed wall portions, and mounting means for manually removably mounting the merchandise display retaining means via selected opposed mounting apertures in the display space.

3,687,091
DISPLAY RACK

Thomas E. Boylan, Fairfield, Conn., assignor to Norcross, Inc., New York, N.Y.

Filed Jan. 9, 1970, Ser. No. 1,624
Int. Cl. A47b 43/02
U.S. Cl. 108—60 **10 Claims**

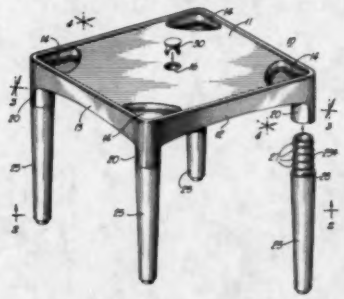


A display case composed of paper in the form of corrugated cardboard fabricated to form relatively thick sections in appearance and treated to provide a wood grained appearance, the assemblage being light in weight, easy to assemble at the site of use and sturdy in construction. the frame is one piece and folds flat.

3,687,092
MOLDED FURNITURE

James P. Manning, Deerfield, Ill., assignor to Republic Molding Corporation

Filed Oct. 12, 1970, Ser. No. 79,882
Int. Cl. A47b 3/06
U.S. Cl. 108—156 **6 Claims**



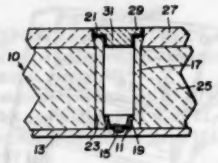
There is provided improved molded furniture of plastic or other suitable material. The improved furniture is provided with an improved leg structure wherein a leg is assembled within a leg-receiving socket of the furniture. The leg is provided with a plurality of circumferentially spaced ribs, retaining the leg firmly in assembly position while providing easy assembly and disassembly thereof. Moreover, generally large molded surfaces of furniture are provided with integrally formed reinforcing ribs. Such reinforcing ribs terminate short of integrally formed edge flanges generally normal to the molded surface and against an additional rib integrally formed with said surface, generally parallel and closely spaced apart from the flange. Advantageously such rib construction prevents pulling or buckling of the furniture flange.

3,687,093

FURNACE WALL CONSTRUCTION

Carlisle O. Byrd, Jr., Houston, Tex., assignor to The Carborundum Company, Niagara Falls, N.Y.

Filed May 12, 1971, Ser. No. 142,648
Int. Cl. F23m 5/00
U.S. Cl. 110—1 A 16 Claims



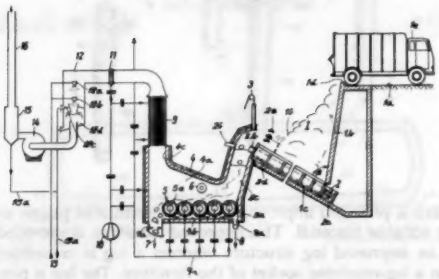
A lining for a furnace having a metal wall is held in place by tubular ceramic anchors and metal bushings fitting therein and secured, by welding or other means, to the metal wall. The ceramic anchors and bushings have interengaging portions holding the anchors on the wall. The anchors, before they are secured to the wall are inserted through a hole in a ceramic insulating and/or refractory body, which may be lamellar, and have such engagement with the body as to support it and hold it in place.

3,687,094

INCINERATOR APPARATUS

Richard Menigat, Dietzenbach, Germany, assignor to Metallgesellschaft Aktiengesellschaft, Frankfurt am Main, Germany

Filed Aug. 27, 1970, Ser. No. 67,378
Claims priority, application Germany, Aug. 29, 1969, P 19 43 855.2
Int. Cl. F23q 5/00
U.S. Cl. 110—8 R 9 Claims



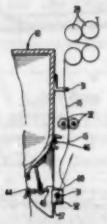
A system for incinerating municipal waste and refuse wherein a movable grate serves as the sole means for controlling the rate at which the refuse traverses the incinerator. The movable grate preferably comprises a plurality of rotary grate members driven so that their upper surfaces advance the refuse while their lower sides carry the ash away from the burning chamber.

3,687,095

TUFTING MACHINE STOP MOTION EMBODYING LIGHT BEAM AND SENSOR WITH TRIGGERING CIRCUIT RESPONDING TO YARN BREAKS

Wilbur Jackson, P.O. Box 239, Chatsworth, Ga.

Filed July 1, 1970, Ser. No. 51,591
Int. Cl. D05c 11/14, 15/00
U.S. Cl. 112—79 R 8 Claims



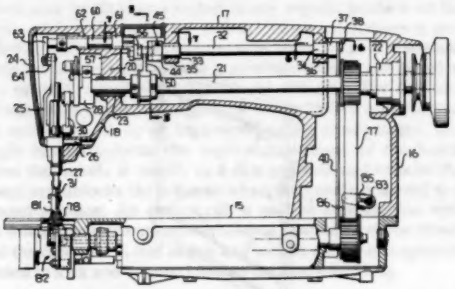
A multi-needle carpet tufting machine receives yarn ends through a guide and feed roll system from a supply beam or an overhead creel. One or more light beam or ray energy sources and coacting photoconductive detector units are so positioned with relation to the machine that a broken yarn end at substantially any point in the system will cause interruption of a light beam and instant activation of an electronic triggering circuit which may be wired directly into the motor control switch of the machine to stop the machine. Many common difficulties with tufting machines are thus overcome.

3,687,096

FEED ADJUSTING MECHANISM FOR SEWING MACHINES

Clarence C. Smith, Chicago, Ill., assignor to Union Special Machine Company, Chicago, Ill.

Filed Dec. 23, 1970, Ser. No. 101,046
Int. Cl. D05b 27/20
U.S. Cl. 112—206 15 Claims



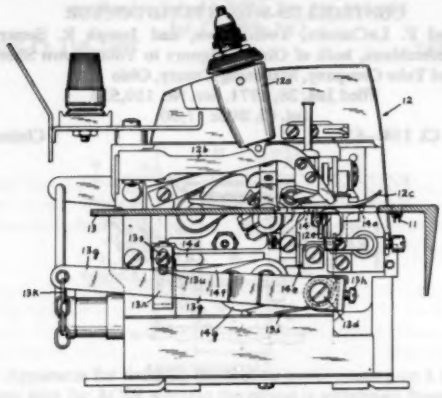
This disclosure relates to sewing machines having upper needle feed means and lower feed dog means, and means for adjusting the length and direction of the feed stroke of the feed dog and of the needle feed means in synchronism. A simple mechanism is provided for adjusting the amplitude of the oscillation of the needle for varying the feed stroke of the needle and this same mechanism is adjustable to change the direction of oscillation of the needle so as to reverse the feeding stroke of the needle. In addition, a single control is provided for regulating the needle feed adjusting mechanism is conjunction with adjusting mechanism for the lower feed means simultaneously and synchronously.

3,687,097

AUTOMATIC CONTROL FOR SEWING MACHINES

Robert L. Kosrow, Hoffman Estates, and John G. Attwood, Oak Park, both of Ill., assignors to Union Special Machine Company, Chicago, Ill.

Filed March 26, 1970, Ser. No. 22,799
Int. Cl. D05b 27/00
U.S. Cl. 112—210 20 Claims



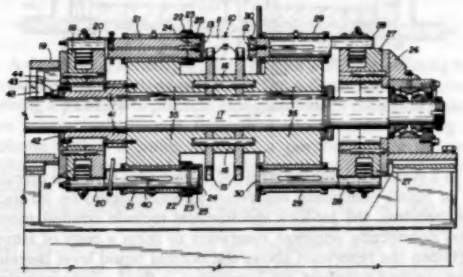
Automatic control over variable work performing means of a sewing machine, such control being exercised during the operation of the machine to produce a seam or line of stitching. In a specific form of the invention, such control brings about an automatic change in the length of stitches being produced in the course of providing a line of stitching on successive work pieces delivered to the machine. This preferably brings about the automatic production of shorter stitches at the beginning and at the end of a line of stitching, so as to minimize the unraveling of the thread at the ends of a seam. The automatic control is in response to light projecting means and a pair of light sensitive devices, the work pieces, as they are moved in the course of forming a seam thereon, serving to cut-off delivery of light from said projecting means to one or another or both of said light sensitive means. Such control is exercised through fluid operated power means.

3,687,098

CONTAINER NECKING MECHANISM AND METHOD

John Hardy Maytag, Denver, Colo., assignor to Coors Porcelain Company, Golden, Colo.

Filed March 19, 1971, Ser. No. 126,138
Int. Cl. B21d 51/00; B21b 17/02; B21d 22/00
U.S. Cl. 113—120 R 4 Claims



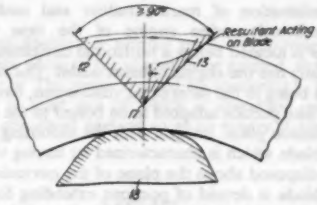
Container necking mechanism comprising a stationary necking die and reciprocatory punch and push plate members, each of said punch and push plate members being controlled by a rotated cam, said cams causing the punch or push plate member to exert pressure in one direction against the container at predetermined times during the cam rotations to move the container toward and from an annular space between the stationary die and punch member, and said cams having complemental working faces on parts of their peripheries which cooperate during part of the necking operation to move a container into necking position in the die by simultaneous movements of both punch and push plate members in the same direction whereby frictional resistance between the punch and the container is eliminated during movement of the container with the punch.

3,687,099

SCORING METAL CONTAINER COMPONENTS

Jozef Tadeusz Franek, Chorley Wood, and Peter Rhodes, Wargrave, both of England, assignors to The Metal Box Company Limited, London, England

Filed Dec. 5, 1969, Ser. No. 882,451
Claims priority, application Great Britain, Jan. 10, 1969, 1,700/69
Int. Cl. B21d 51/26
U.S. Cl. 113—15 A 4 Claims



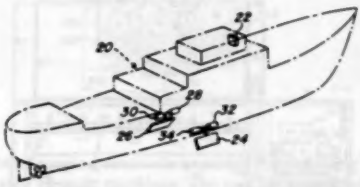
A tool for scoring a metal container component has a scoring blade having two faces which define the shape of the score and which as viewed in section converge substantially to a point. The angle between the two faces is of the order of 75° to 120° and is preferably at least 90°, the optimum angle being 90°. The specification also described a method of scoring the component in which the scoring blade is engaged with a portion of the component which is radiused upwards towards the blade.

3,687,100

MARINE VESSEL ROLL STABILIZER APPARATUS

Everett P. Larsh, 1001 E. Ridge Lane, Miami, Fla.

Filed Oct. 8, 1970, Ser. No. 79,240
Int. Cl. B63b 39/06
U.S. Cl. 114—126 4 Claims



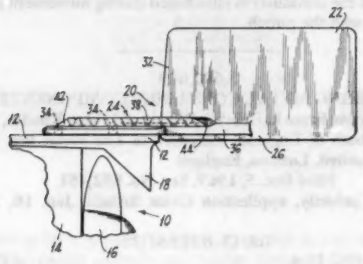
Anti-roll apparatus for a marine vessel. A plurality of fins are carried by the vessel. Each fin is operatively moved by motor mechanism which is connected thereto by means of clutch mechanism. The motor mechanism is in continuous operation. A roll sensor unit is mounted in a position to detect roll motion of the vessel. The roll sensor unit transmits signals to the clutch mechanism in response to roll motion of the vessel. The clutch mechanism joins the motor mechanism to the fins for movement thereof in accordance with operation of the

roll sensor unit. The fins are thus operatively moved to reduce and/or eliminate the roll action of the vessel.

3,687,101
MARINE RUDDER

Douglas F. Linsley, Westport, Conn., assignor to Douglas F. Linsley and Helen E. Linsley, Westport, Conn.

Filed Oct. 22, 1970, Ser. No. 83,066
Int. Cl. B63h *21/26, 25/42*
U.S. Cl. 115—18 B **8 Claims**

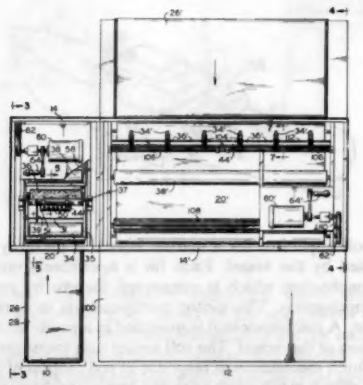


A combination of marine rudder and outboard or inboard/outboard marine engine of the type wherein the propeller is located below a horizontal cavitation plate which also usually has the engine exhaust outlet. The rudder is illustrated as being in the form of an attachment, having a mounting fork-like portion adapted to be bolted to the upper side of the cavitation plate. Integral with the mounting fork is a flat rudder blade which is characterized by having virtually all of its area disposed above the plane of the cavitation plate. The rudder blade is devoid of portions extending for any significant distance below the mounting fork, and the bottom portion of the rudder blade is located substantially in the same plane as the fork and engine cavitation plate. This arrangement provides for easier steering, and enables the rudder to be shifted readily to the straight ahead position from a tight turn position, especially when the craft is travelling at high speeds. The rudder blade is mostly disposed out of the turbulent water or wash created by the propeller. This turbulence or wash has a tendency to prevent easy manipulation and easy straightening of the rudder when the boat is travelling at high speeds in a tight turn position.

3,687,102
APPARATUS FOR TREATING FABRIC ITEMS

Elmer M. Dunn, 1894 Northview Dr. N.E., Salem, Oreg.

Filed Dec. 29, 1969, Ser. No. 888,541
Int. Cl. B05c *11/14*
U.S. Cl. 118—2 **16 Claims**

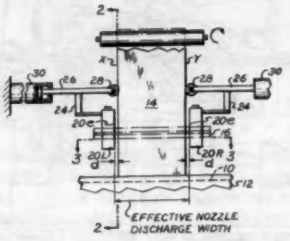


Apparatus for treating fabric items such as mops, mats, rugs, and the like with a dust control fluid includes a conveyor for moving such items with respect to a plurality of rollers. The first roller senses the presence of the item and initiates a measured spray of dust control fluid. A previous roller, e.g. a felt roller, absorbs excess fluid from the item and spreads the fluid evenly, while a hard-surfaced roller urges the fluid into the item. For processing rugs, a rotating brush is employed for raising the nap of the rug after treatment.

3,687,103
CONTROLLED-WIDTH FLUID DOCTOR

Alfred F. LaCamera, Youngstown, and Joseph R. Semer, Columbiana, both of Ohio, assignors to Youngstown Sheet and Tube Company, Mahoning County, Ohio

Filed Jan. 28, 1971, Ser. No. 110,534
Int. Cl. B05c *11/06*
U.S. Cl. 118—63 **5 Claims**

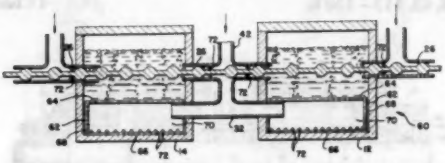


Apparatus for continuously coating an advancing metal strip substrate with molten treating material and controlling the coating thickness by a fluid jet stream. The stream is projected through a discharge nozzle opening which is greater than the strip width but the effective width of the jet stream is controlled to generally correspond to the strip width by means of tracking baffles. The stream is also projected a substantially uniform distance across the effective width, as opposed to projecting the outside edges or zones of the stream a shorter distance than the middle stream zone.

3,687,104
STRIP PROCESSING APPARATUS HAVING AIR LOCKS BETWEEN TANKS

Harry Milton Capper, and Richard Maxwell Wagner, both of Harrisburg, Pa., assignors to AMP Incorporated, Harrisburg, Pa.

Filed Nov. 27, 1970, Ser. No. 93,334
Int. Cl. B05c *3/15*
U.S. Cl. 118—405 **13 Claims**



In a system for plating strip fed workpieces having a plurality of liquid containing reservoirs interconnected by air-lock mechanisms, the air-lock mechanisms include conduit members connecting adjacent reservoirs to form a path of travel between the reservoirs above the normal liquid level therein. The conduit members are connected in fluid communication with a source of pressurized air and with an air chamber positioned in the base of the reservoirs, so that during the plating process, air is supplied to the air chamber to displace liquid from the base of the reservoirs and raise the liquid level in the tanks to immerse the strip fed workpieces. The pressurized air

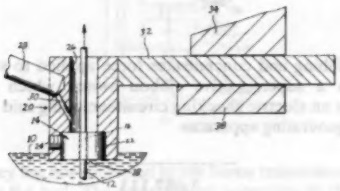
in the conduit member prevents liquid from flowing out of the respective reservoirs as the workpieces pass therethrough.

3,687,105

APPARATUS FOR FINISHING METALLIC COATING ON A FERROUS STRAND

Earle L. Knapp, Kansas City, Mo., assignor to Armco Steel Corporation, Middletown, Ohio

Division of Ser. No. 770,566, Oct. 25, 1968, abandoned. This application Feb. 11, 1971, Ser. No. 114,654
Int. Cl. B05c 3/12
U.S. Cl. 118—405 7 Claims



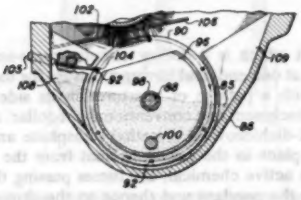
Apparatus for finishing the molten metal coating on a steel core wire for ACSR wherein the strand is withdrawn from the metal bath through a close clearance, submerged die at high speed and in a non-oxidizing atmosphere. It includes a holder for the die which is free to move in any direction in a single plane and is adjustable in a plane normal to the plane of movement.

3,687,106

DONOR APPARATUS AND METHOD

Klaus K. Stange, Pittsford, N.Y., assignor to Xerox Corporation, Rochester, N.Y.

Continuation-in-part of Ser. No. 840,967, July 11, 1969, abandoned. This application Sept. 24, 1969, Ser. No. 864,265
Int. Cl. G03g 13/08
U.S. Cl. 118—621 16 Claims



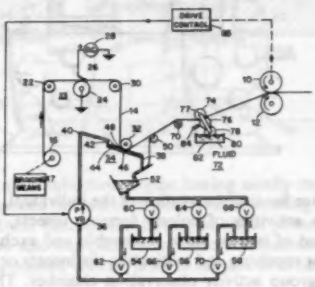
A developing system for latent images wherein a rotating fur brush receives marking particles from a donor assembly comprising a plurality of discrete elongated donor members which are successively moved through a closed path defining a volume within a sump housing, a portion of the defined volume being occupied by marking particles contained in the housing. The donor members may be circular, crescentic, or other configurational cross-sections and may or may not cooperate with a doctor blade. They may be in the form of taut flexible elements which are vibrated slightly to remove excessive toner. In certain embodiments, a striking element in the form of a thin taut but flexible wire or other material is used to charge and fluff the fibrous applicator as well as redistribute undesirable concentrations of toner within the applicator.

3,687,107

PRINTING SYSTEM

Ronald F. Borelli, Medfield; Daniel C. Despres, Lawrence, and Donald J. Garand, Chelmsford, all of Mass., assignors to Honeywell Inc., Minneapolis, Minn.

Filed Dec. 29, 1969, Ser. No. 888,768
Int. Cl. G03G 13/00
U.S. Cl. 118—637 8 Claims



A recording medium is printed upon by exciting it with energy corresponding to the shapes to be printed, developing it, and drying it. The paper is dried by squeezing it between two surfaces at least one of which is absorbent, and then scraping the absorbent surface so as to render it absorptive again.

3,687,108

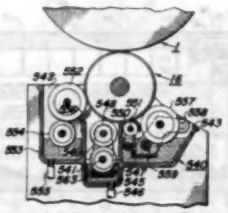
Patent Not Issued For This Number

3,687,109

MATERIALS APPLICATION APPARATUS

Raymond K. Egnaczak, Williamson, N.Y., assignor to Xerox Corporation, Rochester, N.Y.

Filed Nov. 14, 1969, Ser. No. 876,643
Int. Cl. B05c 1/00
U.S. Cl. 118—637 26 Claims



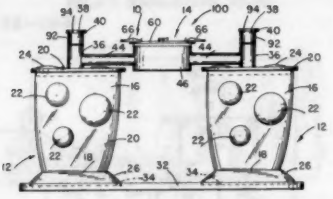
A modular imaging electrode assembly for supplying liquids in automated imaging machines. The unit has a tank holding a roller coupled to an electrical source. The roller is driven past a liquid applying and leveling apparatus and then contacts an imaging member of the machine in which it is located. The tank which is elevated into and out of contact with the member of the machine has two or more sections. The first houses the apparatus to apply liquid to the roller and the second has cleaning brushes in it to remove any materials remaining on the roller. The sections are separated by squeegees for preventing material in the one section from effecting that in another.

3,687,110

INSECT ACTIVITY OBSERVATION CENTER

Harold N. Braunhut, c/o Honey Toy Industries, 200 5th Ave., New York, N.Y.

Filed Sept. 3, 1970, Ser. No. 69,229
Int. Cl. A01k *01/00*
U.S. Cl. 119—1 **14 Claims**



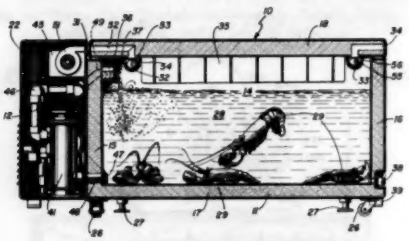
A device for the observation of the individual, group and intergroup activities of colony forming insects, such as ants, comprised of two or more removable and exchangeable elements for receiving and cultivating the insects or colonies, and an intergroup activity observation chamber. The cultivation elements are provided with elements to permit the introduction, or removal, of insects or other materials, and may be provided with a nesting element. The receiving and cultivating elements are also provided with a plurality of magnifiers and with an egress leading to the intergroup activity chamber, wherein these elements may be provided with transparent walls which are preferably colored red to view the insects within the nesting element. The chamber is provided with an element to control the passage of insects from, or back to, the cultivating elements. This chamber is also provided with an additional access element to permit the introduction into or removal from the chamber of insects or materials as described, and with a magnifying element for better observation.

3,687,111

STORAGE SYSTEM

Karl F. Epper, Wells, Maine, assignor to Ocean Sales, Inc., Portland, Maine

Filed April 20, 1970, Ser. No. 30,009
Int. Cl. A01k *61/00*
U.S. Cl. 119—2 **11 Claims**



This invention relates to a storage system and, more particularly, to apparatus for transporting live sea animals and the like and preserving them in their natural habitat during transit.

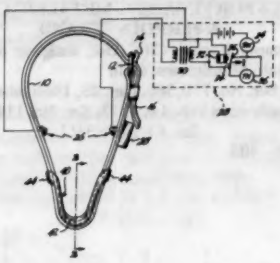
3,687,112

ANTI-CRIBBING DEVICE FOR HORSES

Gary A. Henderson, Fourth & Main St., Ellensburg, Wash.

Filed Sept. 3, 1970, Ser. No. 69,243
Int. Cl. A01k *15/00, 27/00*
U.S. Cl. 119—29 **4 Claims**

Cribbing and windsucking preventor for horses is provided by a strap encircling the throat to hold electrodes or prods at opposite sides. A U-shaped former is slidingly associated with the strap and fits to the horse's windpipe. The former keeps the strap from closing the windpipe when the throat is swelled as by cribbing and concentrates force applied to stretch the strap on a supersensitive ribbon switch which closes to complete an electric shocking circuit including said prods and current generating apparatus.



3,687,113

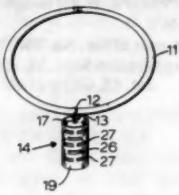
Patent Not Issued For This Number

3,687,114

PENDANT FOR FLEA PREVENTION AND PENDANT FOR FLEA COMPOUND

William E. Berkstresser, San Francisco, Calif., assignor to Web Mercantile Corporation, Novato, Calif.

Filed Feb. 22, 1971, Ser. No. 117,539
Int. Cl. A01k *27/00*
U.S. Cl. 119—106 **8 Claims**



A pendant which is a hollow circular cross-section container, open at one end, and having a closure for the open end is formed with a pattern of apertures in its side walls and means for attachment to a conventional pet collar. A tablet, or lump, of 2,2-dichlorovinyl dimethyl phosphate and inert ingredients is place in the pendant. Heat from the pet slowly sublimes the active chemical, the fumes passing through the apertures in the pendant and thence to the skin of the pet, without danger of close proximity of the chemical to the skin. The chemical is a recognized flea and tick insecticide.

3,687,115

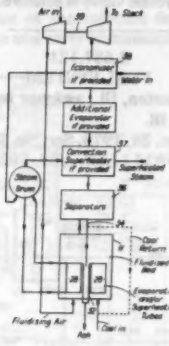
STEAM BOILERS

Alan Bell, London, England, assignor to Foster Wheeler Corporation, Livingston, N.J.

Filed Dec. 8, 1970, Ser. No. 96,102
Claims priority, application Great Britain, Dec. 12, 1969, 60,879/69
Int. Cl. F22b *1/02*
U.S. Cl. 122—4 D **4 Claims**

This invention relates to steam boilers which are fired by fluidized bed burners. Immersed in the fluidized bed are a number of banks of upright tubes, each bank of tubes extending between upper and lower headers, the banks being jux-

taposed within the bed so that the tubes are substantially evenly distributed over the cross-sectional area of the bed. Preferably the headers radiate out from the axis of the bed and preferably the burners headers are positioned below the bed



so that they are not subjected to the fierce temperatures existing within the bed. The arrangement according to the invention has inter alia the advantage that phase separation does not occur within those tubes used as evaporating tubes and so this reduces the danger of a tube burn out.

3,687,116

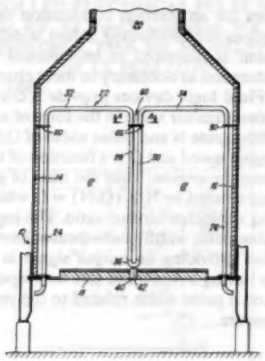
PROCESS STEAM HEATERS

Kenneth Holt, Twyford, England, assignor to Foster Wheeler Corporation, Livingston, N.J.

Filed May 5, 1971, Ser. No. 140,409

Int. Cl. F22b *37/24*

U.S. Cl. 122—356 **9 Claims**



This invention relates to process stream heaters. These heaters comprise a furnace chamber through which a number of tubes carrying the process stream to be heated pass. These tubes must be free to expand along their length but should not distort away from position since such distortion might result in uneven and insufficient heating. According to the invention this distortion is prevented where there are adjacent pairs of rows of tubes by means of a tube guide system comprising a zig-zag lattice made up of a number of clamping bars. Adjacent bars are pivoted to one another near their ends and the tubes nest in and are trapped in the V-shaped openings of the zig-zag lattice. In this way, the tubes are left free to expand and more relatively to one another along their lengths but any attempted distortion of a tube away from its axial position tends to cause pivoting of the clamping bars retaining that tube in place so that the lattice tends to lock more tightly onto other tubes so restraining that tube attempting to distort.

3,687,117

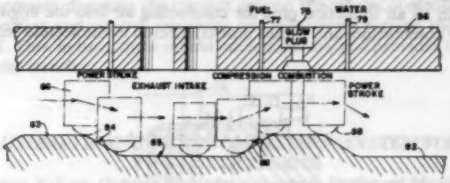
COMBUSTION POWER ENGINE

Viktor Mitrushi Panariti, 111 Imperial Heights Drive, Ormond Beach, Fla.

Filed Aug. 7, 1970, Ser. No. 62,123

Int. Cl. F02b *57/00, 75/26*

U.S. Cl. 123—43 A **4 Claims**



A continuous combustion engine having axially reciprocating, radially spaced pistons each axially reciprocating in a non-harmonic motion each piston having multiple power strokes per revolution and complete combustion at maximum compression and constant volume prior to the power stroke.

3,687,118

CRANK CHAMBER COMPRESSION-TYPE TWO-CYCLE ENGINE

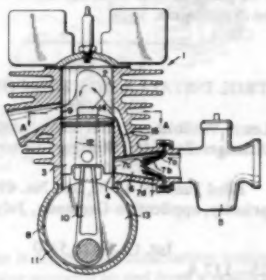
Kazuhiko Nomura, Hamamatsu, Japan, assignor to Yamaha Hatsudaki Kabushiki Kaisha, Hamakita-shi, Shizuoka-ken, Japan

Filed July 10, 1970, Ser. No. 53,949

Claims priority, application Japan, July 14, 1969, 44/55652; Aug. 26, 1969, 44/81051

Int. Cl. F02b *33/04*

U.S. Cl. 123—73 R **7 Claims**



A crank chamber compression-type two-cycle engine wherein an intake passage is communicated with the interior of a cylinder through an intake port which is opened and closed by a piston disposed in the cylinder for reciprocal motion therein, and a crank chamber and the combustion chamber in the cylinder are communicated with each other through a scavenging port, opened and closed by the piston, and a scavenging passage.

3,687,119

CONTROL DEVICE FOR AN OIL AND GAS OPERATED DIESEL ENGINE

Adrianus Johannes Theodorus Hoogeboom, Harmelen, Netherlands, assignor to William Turner Brunot, London, England

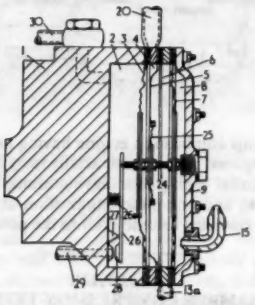
Continuation of Ser. No. 800,267, Feb. 19, 1969, abandoned. This application Jan. 8, 1971, Ser. No. 105,066

Int. Cl. F02b *3/00*

U.S. Cl. 123—27 GE **5 Claims**

A control device for a compression-ignition engine in which a venturi means forming a part of an exhaust pipe of the en-

gine is connected to a first pipe so that the first pipe receives suction by the passage of exhaust gases through the venturi means. The first pipe is connected to a first chamber from which chamber a second chamber is separated by a flexible diaphragm, and a second pipe connects the second chamber to the exhaust pipe of the engine. A control valve controls the flow of gaseous fuel into the air induction port of the engine and operating means operates the valve in response to movement of the diaphragm. A second venturi means is associated with an air induction pipe for conducting air into the engine for combustion, and a third pipe connected to the second ven-



turi means receives suction by the passage of air through the second venturi means. The third pipe is connected to a third chamber separated by a second flexible diaphragm from the second chamber and separated by a third flexible diaphragm from a fourth chamber. A pipe connects the fourth chamber to the air induction pipe, and the control valve is arranged to control the flow of gaseous fuel into the fourth chamber. An operating member is adapted to be moved by the first, second and third diaphragms to operate the control valve to control the supply of gaseous fuel in accordance with the displacements of the diaphragms.

3,687,120

CONTROL INSTALLATION FOR COMBUSTION ENGINES

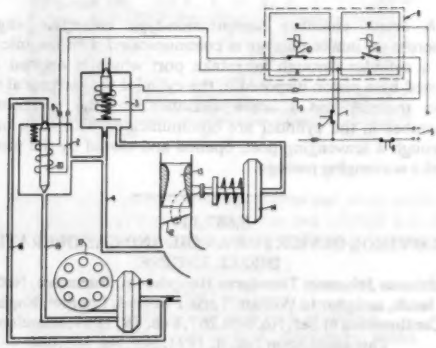
Siegfried Lenz, Wailblingen, Germany, assignor to Daimler-Benz Aktiengesellschaft, Stuttgart-Untertuerkheim, Germany

Filed June 25, 1970, Ser. No. 49,816

Claims priority, application Germany, July 2, 1969, P 19 33 507.0

Int. Cl. F02b *5/00*

U.S. Cl. 123—117 A **26 Claims**



A control installation for internal combustion engines in which vacuum taken from the suction line is used for the purpose of adjusting the ignition timing in the distributor and for achieving a thrust boost at the throttle valve whereby an electric control circuit is provided which controls in dependence of influencing magnitudes of the engine, such as temperature and rotational speed, two solenoid valves that are connected in the vacuum line so that the ignition point is shifted and the thrust boost of the throttle valve is achieved.

3,687,121

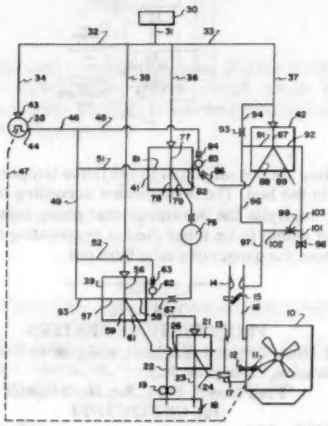
FUEL SYSTEM

John J. Tuzson, Evanston, Ill., assignor to Borg-Warner Corporation, Chicago, Ill.

Filed Dec. 28, 1970, Ser. No. 101,562

Int. Cl. F02d *11/08, 3/00;* **F02n** *39/00*

U.S. Cl. 123—119 R **5 Claims**



A fuel system for an internal combustion engine employs fluid logic devices for controlling a fuel injector valve. The fuel requirement is delivered in intermittent pulses having variable time duration as necessary to meet changes in the fuel requirement. Fluid logic devices provide a control signal for operating the fuel injector valve in the form of a train of pulses having a repetition rate N and pulse width of Q/N where N is a function of engine speed and Q is a function of the flow rate of air inducted into the engine. Thus the train of pulses provides a control signal related to $N \times (Q/N) = Q$ which is desirable for maintaining a selected air-fuel ratio. The logic circuitry includes a variable pulse width multivibrator having an external bias connection providing an output signal in the form of a train of pulses having a repetition rate corresponding to a first input signal and a pulse width related to the reciprocal of the bias signal pressure.

3,687,122

COMBUSTION AID FOR A COMPRESSION IGNITION ENGINE

Roy Kamo, Columbus, Ind., assignor to Cummins Engine Company, Inc., Columbus, Ind.

Continuation of Ser. No. 801,710, Feb. 24, 1969, Pat. No. 3,526,214, which is a continuation-in-part of Ser. No. 685,103, Nov. 22, 1967, and a continuation-in-part of Ser. No. 685,106, Nov. 22, 1967. This application July 28, 1970, Ser. No. 58,920

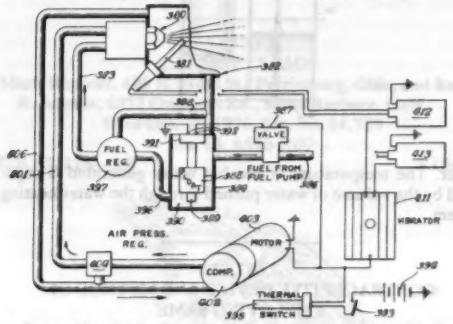
Int. Cl. F02m *31/04*

U.S. Cl. 123—122 G **15 Claims**

This disclosure deals with an internal combustion engine of the compression ignition type, including an improved combustion aid for facilitating starting of the engine and for reducing white smoke (unburned fuel in the exhaust) during starting and operation.

The improved combustion aid includes a fuel burner located in the engine air intake, the products of combustion

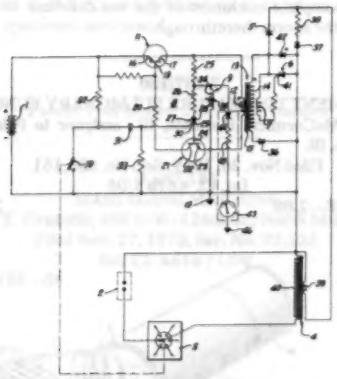
from the fuel burner flowing to the inlet ports of the cylinders. These products of combustion mix with and heat the primary combustion air passing through the air intake. Such preheating combined with the temperature increase resulting from compression in the engine cylinders insures rapid ignition and complete combustion of the injected fuel to effect prompt starting of the engine and early elimination of white smoke.



For starting and operation, the burner may be started and stopped automatically under the control of a thermostat responsive to the temperature of the engine coolant at a point where the coolant either enters or leaves the engine block. A system is also provided for supplying the burner with fuel and air and for regulating the flow of fuel and air in response to certain engine parameters.

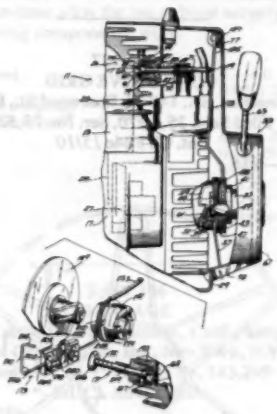
This disclosure also relates to an improved fuel burner that may be used to start either low compression ratio engines or conventional high compression ratio engines.

3,687,123
CONTROLLED ELECTRICAL PULSE SOURCE
Floyd M. Minks, RT. #1, Port Washington, Wis.
Filed Oct. 4, 1965, Ser. No. 492,570
Int. Cl. F02d *11/10*
U.S. Cl. 123—148 E **7 Claims**



A triggered blocking oscillator includes a charging transistor connected in series with the primary of an oscillator transformer which includes a secondary connected in series with a diode to charge a capacitor. The capacitor is also connected to the engine distributor in series with a silicon controlled rectifier. The transformer includes a control winding connected to fire the rectifier. A control transistor is connected in the base circuit of the main charging control transistor with the input of the control transistor connected in circuit through a silicon controlled rectifier. The gate of the silicon controlled rectifier and the base of the control transistor are connected to a battery in series with breaker points of the internal-combustion engine to provide periodic turn-on pulses to the silicon controlled rectifier and transistor. A square loop core unit is connected to divert current from the silicon controlled rectifier and the input of the control transistor. When the circuit is first turned on, the current increases until such time as the square loop core unit is saturated. At that time, the reactance of the square loop core unit decreases diverting the current around the silicon controlled rectifier and control transistor and effectively turning them off. This, in turn, turns off the main transistor and provides the pulse transfer.

3,687,124
AUTOMATIC ENGINE DECOMPRESSION SYSTEM FOR TWO-CYCLE ENGINE
Bruno Kolorz, Ontario, Canada, assignor to Outboard Marine Corporation, Waukegan, Ill.
Filed Oct. 5, 1970, Ser. No. 77,867
Int. Cl. F02n *17/08, 3/02*
U.S. Cl. 123—182 **13 Claims**

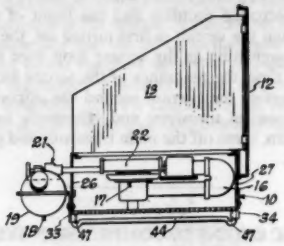


Disclosed herein is an internal combustion engine having a decompression valve movable to and from a position closing a port communicating with an engine cylinder, together with a starting device having a pinion which is axially movable to engage an engine starter gear and rotatable so as to crank the engine to facilitate starting, and a linkage mounted on the engine and engageable with the starter pinion and with the decompression valve so as to displace the valve away from the position closing the port in opposition to a valve biasing spring and in response to movement of the pinion toward the starter gear.

3,687,125
PORTABLE CAMPING STOVE
Gerald A. Weimer, Kirkwood, Mo., assignor to Kellwood Company, St. Louis, Mo.
Filed May 3, 1971, Ser. No. 139,581
Int. Cl. F34c *5/20*
U.S. Cl. 126—38 **9 Claims**

A portable camping stove including a casing and a fuel tank sub-assembly detachably mountable on the casing. The casing has a key slot and the sub-assembly has a headed stud cooperating with the slot. A leg member pivotally mounted on the casing, when in collapsed condition, conceals the slot so that the stud cannot pass through thereby preventing the sub-

assembly from being mounted on the casing. When the leg member is in substantially erected position, the slot is exposed



to permit mounting of the sub-assembly. In fully erected position the sub-assembly is locked to the casing against inadvertent displacement.

3,687,126

Patent Not Issued For This Number

3,687,127

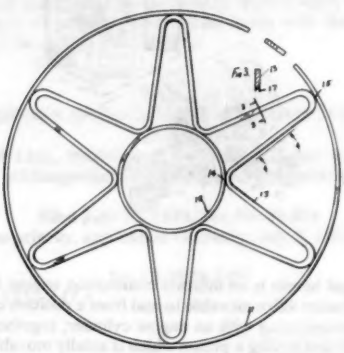
COOK STOVE GRID

Donald P. Mossman, Sr., 148 W. Rosewood St., Rialto, Calif.

Filed Sept. 25, 1970, Ser. No. 75,526

Int. Cl. F24c *15/10*

U.S. Cl. 126—215 **1 Claim**



A grid for cook stoves to prevent direct contact of the stove heating element with the cooking vessel thereby preventing scorching of food. The grid includes a spider member made of a relatively thin serpentine shaped spider welded to an inner ring and to an outer ring.

3,687,128

INSTANT WATER HEATER

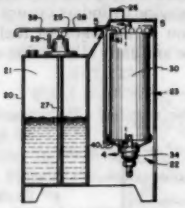
Garold H. Williams, 43 West 100 S., Smithfield, Utah

Filed Feb. 25, 1970, Ser. No. 14,045

Int. Cl. F24h *1/08*

U.S. Cl. 126—350 R **12 Claims**

A portable water heater for use in camping, mobile trailers, and pickup campers, that will rapidly heat quantities of water efficiently and safely. Heat is generated by burning bottled propane gas delivered through a simple burner apparatus, and the flame is directed into a surrounding water heating system through which water is circulated to be heated in a matter of seconds. The water heater may include a built in water supply or it may be adapted to connection to an external water con-



tainer. The temperature of the hot water generated is regulated by the volume of water pushed through the water heating system.

3,687,129

CONTRACEPTIVE DEVICE AND METHOD OF EMPLOYING SAME

Elie S. Nuwayser, Peabody, Mass., assignor to Abcor, Inc., Cambridge, Mass.

Filed Oct. 2, 1970, Ser. No. 77,434

Int. Cl. A61b *19/00*

U.S. Cl. 128—1 R **34 Claims**

A male contraceptive device which comprises a plug having a coating of fabric on its outer walls. The plug is inserted in the vas deferens. The fabric coating allows for the ingrowth of cells from the wall of the vas deferens into the fabric. This provides for complete occlusion of the vas deferens to prevent passage of the sperm therethrough.

3,687,130

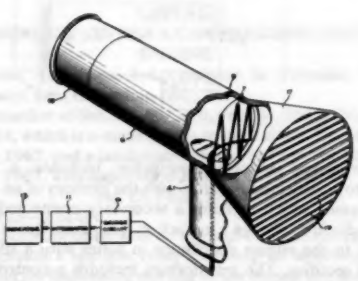
INSTRUMENT TO MEASURE PULMONARY FUNCTION

James B. McCormick, Hinsdale, Ill., assignor to Pelam Inc., Hinsdale, Ill.

Filed Nov. 26, 1969, Ser. No. 880,161

Int. Cl. A61b *5/08*

U.S. Cl. 128—2.08 **2 Claims**



The respiratory volume measuring instrument includes means defining a passageway which is adapted so that a patient can exhale into one end thereof. Disposed in the passageway is a measuring element of a means for measuring

the flow-rate of air passing through the passageway. The flow-rate measuring means is connected to an integrating means which integrates the readings of the measuring means. The integrating means is connected, in turn, to an indicating means which indicates the output of the integrating means, and hence, the volume of air per unit time exhaled by the patient through the passageway. The volume of air exhaled in one second is an important index of function for the lungs.

3,687,131

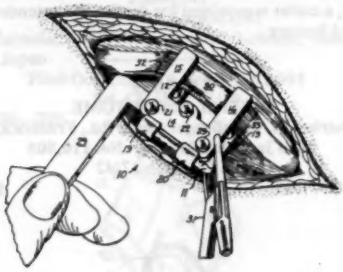
BIOPSY CLAMP

Mark Rayport, 409 E. Front St., Perrysburg, Ohio, and Rudolf R. Schulte, 5377 Overpass Rd., Santa Barbara, Calif.

Filed Oct. 28, 1970, Ser. No. 84,759

Int. Cl. A61b *5/00*

U.S. Cl. 128—2 B **5 Claims**



A biopsy clamp for holding in a substantially unstressed condition a tissue sample removed from a large body of tissue according to the present disclosure comprises first and second plates having first and second jaw means, respectively. Hinge means fastened to the plates holds the plates in hinged relation so that the jaws may be moved between open and closed positions. Teeth on the jaws are arranged so that they are in grasping relationship to a tissue specimen when the jaws are in their closed position. Guide means, including retention means, is provided for determining and retaining the position of said jaws when in their closed position so as to space the jaws to hold the specimen unstressed.

3,687,132

Patent Not Issued For This Number

3,687,133

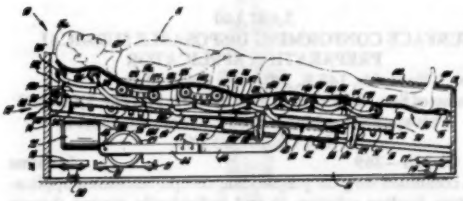
MASSAGING MACHINE

Nicholas T. Grubelic, 480 N.W. 124th St., North Miami, Fla.

Filed Nov. 27, 1970, Ser. No. 93,123

Int. Cl. A61h *11/00*

U.S. Cl. 128—58 **20 Claims**



A spring suspended flexible platform on which the person to be massaged lies. On the stand and beneath the platform is a rail for a reciprocating carriage moved back and forth by a motorized mechanism. On the carriage are spring pressed rollers which resiliently press upwardly against the underside of the platform to massage the person lying on the platform. The platform has side aprons to prevent the person thereon from moving his arms or legs down inside the stand, to thereby prevent contact with moving parts of the carriage or rollers.

3,687,134

Patent Not Issued For This Number

3,687,135

MAGNESIUM-BASE ALLOY FOR USE IN BONE SURGERY

Genrikh Borisovich Stroganov, 2 Volkovsky proezd, 1, kv. 29; Evgeny Mikhailovich Savitsky, ulitsa Dmitria Ulyanova, 3, kv. 13; Nina Mikhailovna Tikhova, Frunzenskaya naberezhnaya, 38/1, kv. 394; Vera Fedorovna Terekhova, Belyaevo-Bogorodskoe, kvartal 48, korpus 23, kv. 235; Mstislav Vasilievich Volkov, 1 Stroitelnaya ulitsa, 6, korpus 5, kv. 10; Konstantin Mitrofanovich Sivash, B. Pirogovskaya ulitsa, 37/43 "A", kv. 49, and Vladislav Sergeevich Borodkin, Shelepikha, 5 ulitsa, 6/8, kv. 91, all of, Moscow, U.S.S.R.

Filed Sept. 15, 1969, Ser. No. 858,149

Int. Cl. C22c *23/00*; A61f *5/01*

U.S. Cl. 128—92 B **5 Claims**

A magnesium-base alloy for use in bone surgery which contains the following components, wt.%:

Rare earth element	0.4–4.0
Cadmium	0.05–1.2
An element from the group consisting of calcium and aluminum	0.05–1.0
Manganese	0.05–.05
Silver	0–0.8
Zirconium	0–0.8
Silicon	0–0.3
Magnesium	remainder

3,687,136

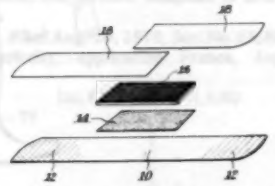
BANDAGE

Dewey Blain Carmody, Bell Gardens, Calif., assignor to The Lee Raymond Organization, Inc., New York, N.Y.

Filed May 14, 1971, Ser. No. 143,299

Int. Cl. A61l *15/00*

U.S. Cl. 128—156 **3 Claims**



Bandage adapted to be worn in exposed position have color means therein matched to the skin color of the wearer.

3,687,137

SMALL ANIMAL ANESTHESIA MACHINE

Donald W. Johnson, New Philadelphia, Ohio, assignor to Snyder Manufacturing Company, Inc., New Philadelphia, Ohio

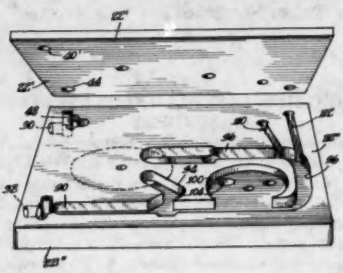
Filed Nov. 13, 1969, Ser. No. 876,335

Int. Cl. A61n *17/00*

U.S. Cl. 128—188 **16 Claims**

Anesthetizing apparatus capable of use with anesthetic agents requiring an in-line arrangement, as well as those necessitating the use of an out-of-line arrangement. The apparatus includes the main body member having a plurality of

internal passages which provide a closed system or circuit, and further defining two separate and distinct paths within said circuit. Waste gas purging means, vaporizer means and oxygen inlet means are connected to the body member in communication with said internal passages. The apparatus further includes control means for selectively providing one or the other of said paths for the carbon dioxide free waste gas leaving the purging means. Accordingly, purged waste gas to be re-circu-



lated to the animal can be either mixed with oxygen and then subjected to the vaporizer (in-line arrangement), or said gas may bypass the vaporizer and be mixed with oxygen that has previously been subjected to the vaporizing process (out-of-line arrangement). In addition there is provided a novel construction for the main body member, wherein a pair of opposed plate members are utilized, one said member having channels formed therein such that upon assembly said channels are covered to define the internal passages of the system

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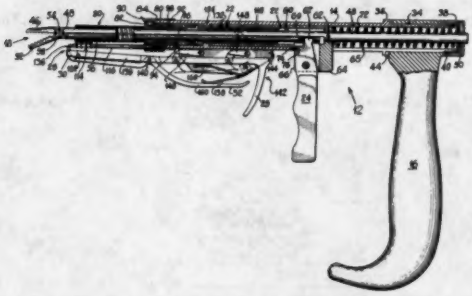
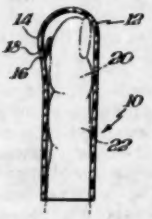
3,687,138
REPEATING LIGATURE GUN
Robert K. Jarvik, 17 Douglas Ave., Stamford, Conn.
Filed Aug. 17, 1970, Ser. No. 64,161
Int. Cl. A61b *17/12*
U.S. Cl. 128—326 **12 Claims**



A preformed ligature comprises a loop, loop forming closure and an extension which may be pulled to close the loop about a bleeder. One preformed ligature according to the invention is formed of a continuous loop of gut or synthetic suture material tied into a slip knot to form the closure and the extension is the second loop thus formed therein which may be pulled by means of a hook. Another preformed dual loop ligature is formed of a continuous loop of suture material and a narrow enveloping closure. The loop preferably has a ratchet-like surface and the closure a cooperating pawl-like surface to provide a ligature loop that may only slip one way.

Repeating ligature guns for applying a plurality of such preformed ligatures comprise a tubular cartridge on which a plurality of the ligatures are preformed; the cartridge comprising a helical loop engaged track for advancing the ligatures toward the end thereof. During a surgical procedure, successive cartridges may be mounted on the instrument provided by the invention. The instrument comprises clamping jaws coaxial with the mounted cartridge for pulling a clamped bleeder into the end of the tubular cartridge and means for rotating the cartridge one revolution to advance a ligature off the end of its helical track. The cartridge preferably comprises a bar about which the second loops of the preferred forms of preformed ligatures are formed for preventing rotation of the ligatures as they are advanced by the helical track and for pushing against the slip knot or closure when the ligature is being tightened. A trigger on the ligature gun controls closure of the jaws and withdrawing of the bleeder into the end of the cartridge while rotating the cartridge one revolution by means of a cam mechanism to release a ligature. The cam track may be part of the cartridge or part of the instrument. The instrument is provided with a hook for engaging the second loop of the pretied ligature and for pulling the same to tighten the ligature about a bleeder. The hook may be actuated by the first trigger or by a second hook trigger. In one embodiment of the invention, a cutter is provided for cutting the extended loop of the pretied ligature.

3,687,139
DIGITAL AMNIOTOME
Jean R. Poirier, Rt. 9, Ballenger Creek Rd., Frederick, Md.
Filed Jan. 28, 1971, Ser. No. 110,505
Int. Cl. A61b *17/42*
U.S. Cl. 128—361 **11 Claims**

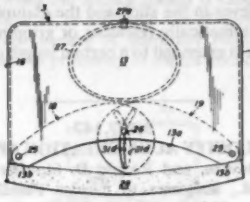


The digital amnitome described herein is a generally hollow, cylindrical finger-like device closed at one end adapted to be placed on and operated by a finger for rupturing the amniotic membrane during obstetrical procedures. The cylindrical device is adapted to extend over the second finger joint and preferably is formed of a plastic material that is stiffly flexible to aid in the flexure of the first finger joint which operates the device. Adjacent the closed end of the cylindrical device there is a resilient recessed portion in one wall having a sharp tipped, hook-like element secured thereto. When the fingertip is flexed, the resilient portion and sharp tipped element, which are normally in a retracted position, are extended radially to expose the sharp tip and permit its use in rupturing of the amniotic membrane.

3,687,140
SURFACE CONFORMING DISPOSABLE SURGICAL PREPARATION APPLICATOR
Verne J. Reynolds, 148 E. Jefferson, Boise, Idaho
Division of Ser. No. 839,963, July 8, 1969, Pat. No. 3,613,685.
This application March 17, 1971, Ser. No. 125,141
Int. Cl. A61m *35/00*
U.S. Cl. 128—269 **5 Claims**

A combined surgical preparation compartmentized applicator tray feeding solution to and individually storing therein ready for use hand gripped surgical preparation applicators. Each of the surgical applicators has a sponge-like material mounted on a hand grip portion so that the sponge material is biased to a convex shape when stored in the tray to receive preparation solution. In applying the sponge portion of the ap-

plicator carrying the solution it conforms to the body contour

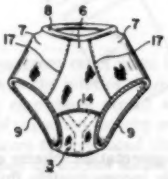


and discharges the solution evenly and completely to all abutting surfaces.

3,687,141
SANITARY GARMENT

Tamio Matsuda, 23-2, Sakuragawa 2-chome, Itabashi-ku, Tokyo, Japan

Filed Oct. 15, 1970, Ser. No. 81,091
Int. Cl. A61f *13/16*
U.S. Cl. 128—288 2 Claims

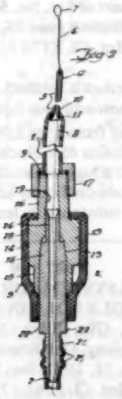


A sanitary garment comprising a crotch section consisting of stretchable fibrous webs, fluid-repellent material which is on the inside of the stretchable fibrous webs and a non-stretchable Y-shaped tape which is shorter than the length of the stretchable fibrous webs and of the fluid-repellant material, the non-stretchable Y-shaped tape being fastened at its upper end to the front crotch seam and at its lower end to the back crotch seam.

3,687,142
CATHETER

Saul Leibinzohn, Tel-Aviv, Israel

Filed Oct. 6, 1970, Ser. No. 78,433
Int. Cl. A61m *25/00*
U.S. Cl. 128—348 16 Claims

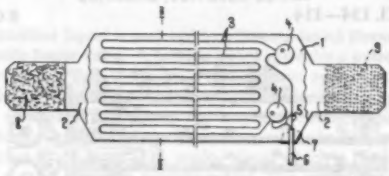


A catheter adapted for introduction into difficulty accessible regions of the human body comprising a catheter tube and a flexible tube adapted for displacement within the catheter tube and for protrusion from the distal end of the catheter tube. A radio-opaque embolus is attached to the distal end of the flexible tube by means of a flexible thread. When the catheter is inserted into the body in the vicinity of the required region, the embolus is directed into the required region by the flow of bloodstream together with gravity forces, carrying with it the flexible tube. Suitable fluid can then be injected into the required region through the catheter and apertures formed in the flexible tube.

3,687,143
PRESSURE BANDAGE AND A METHOD FOR PRODUCING THE PRESSURE BANDAGE

Victor Schneeberger, Dulliken, and Robert G. Braunschweig, Olten, both of Switzerland, assignors to Schneeberger Kork AG, Soleur, Switzerland

Filed Nov. 2, 1970, Ser. No. 86,254
Claims priority, application Germany, Nov. 11, 1969, P 19 56 683.7
Int. Cl. A61f *7/00*
U.S. Cl. 128—402 14 Claims

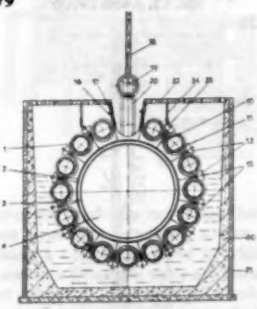


A pressure bandage whereby heat is directly transmitted to the body and the therapeutic effect is substantially improved by applying a heatable bandage under pull and pressure to the part of the body to be treated. To this end the heatable pressure bandage is elastically extensible and has self-adhering closures enabling proper application of the bandage to parts of different size of a body.

3,687,144
INSTALLATION FOR THE TREATMENT, BY IMMERSION IN A LIQUID, OF PARTS OR OF MATERIALS, ESPECIALLY FOR THE HEAT TREATMENT OF PREFABRICATED CONCRETE ELEMENTS IN HOT WATER

Mircea Borcoman, and Virgil Ciufu, both of 23, rue Saint-Didier, Paris, 16e, France, assignors to said Borcoman, by said Ciufu

Filed Aug. 20, 1970, Ser. No. 65,490
Claims priority, application France, Aug. 29, 1969, 6929566
Int. Cl. B08b *3/10, 9/02*
U.S. Cl. 134—79 8 Claims



The installation comprises an assembly of a float cylinder with a horizontal axis and immersed totally or partially in a tank containing the liquid. Fixing means on the cylinder fix the parts or materials on its outer surface. Automatic means introduce the parts or materials into the fixing means and ex-

tract them after treatment. The cylinder is rotated and in the course of rotation the parts or materials held by the fixing means are immersed in a liquid and subjected to the appropriate treatment. The float cylinder may be a casing rigidified by hoops and drums, rigidified in turn by gussets. Sliding gates, walls or rubber curtains may be included to divide the treatment tank into pre-heating, isothermal and cooling zones. When the fixing means include an open type recess an automatic blocking device formed by stakes, springs and levers may be provided to co-operate with cams mounted in openings in the fixed walls of the tank. When the fixing means comprise a closed type recess it is provided with annular supports and rollers mounted on the cylinder.

3,687,145

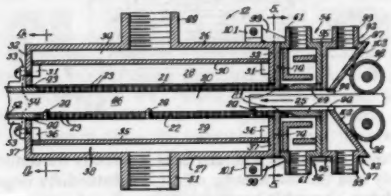
QUENCH SYSTEM

Carlton F. Schrader, Chesteron; Harold L. Taylor, Hammond, both of Ind., and William E. Heitmann, Dolton, Ill., assignors to Inland Steel Company, Chicago, Ill.

Division of Ser. No. 585,516, Oct. 10, 1966, Pat. No. 3,531,334. This application June 26, 1970, Ser. No. 59,856

Int. Cl. C21d *1/00*; B08b *3/02*

U.S. Cl. 134—114 **8 Claims**



A heated metal work-piece, particularly a metal plate, is quenched by passing it through an elongated restricted quench channel filled with quench liquid flowing at high velocity. Quench liquid is supplied at the channel inlet in the form of submerged liquid sheets directly angularly against opposite sides of the work piece. Sealing liquid is provided upstream from the liquid sheets to prevent air aspiration into the channel. Submerged jets of quench liquid may be introduced into the channel downstream from the liquid sheets. Sealing rolls may be provided adjacent the channel inlet for sealing engagement with the work-piece during entry into the channel.

3,687,146

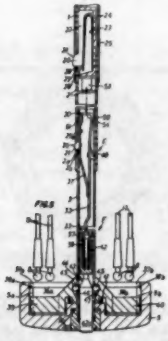
COLLAPSIBLE UMBRELLA WITH AUTOMATIC AND MANUAL DOME-RIB LOCKING MEANS

Heinz Seitel, Solingen-Ohligs, Germany

Filed Feb. 17, 1970, Ser. No. 12,017

Int. Cl. A45b *19/06*

U.S. Cl. 135—26 **8 Claims**



An umbrella having a telescoping stick and collapsible ribs whereby clamping means are provided in the handle for gripping the ends of the dome ribs when the umbrella is collapsed. Linkage is provided in the telescopic stick connecting an actuation lever in the stick and the clamping means in the handle for automatically releasing or gripping the dome ribs when the stick is extended to a certain length or being reduced to that length.

3,687,147

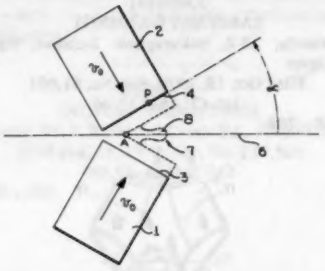
JET VELOCITY AUGMENTATION APPARATUS

Romald E. Bowles, and Ronald D. Stouffer, both of Silver Spring, Md., assignors to Bowles Fluidics Corporation, Silver Spring, Md.

Continuation of Ser. No. 716,215, March 26, 1968, abandoned. This application Aug. 5, 1970, Ser. No. 61,491

Int. Cl. F15c *1/14*

U.S. Cl. 137—1 **9 Claims**



A jet velocity augmentation scheme employs a pulsed fluid source of relatively incompressible fluid which produces at least two fluid jets which are caused to impact on one another with the leading faces of the fluid jets at a relatively small angle, for instance 60° with a centerline between the faces. A shaped charge effect is produced as the result of collapse of a cavity defined between the faces of the fluid slugs. Augmentation of jet velocity results and increases of velocity of the order of 3.5 to 11.5 times may result depending upon the angle of the faces of the fluid slugs. This results in corresponding final velocity pressure amplification of the order of 12.25 to 132.25 times the original velocity pressure.

3,687,148

PROCESS OF REDUCING FRICTION LOSS IN FLOWING HYDROCARBON LIQUIDS AND COMPOSITIONS THEREOF

Vitold Kruka, 12714 Cobblestone, Houston, Tex., and Dale J. Meier, 708 Baera Dr., El Cerrito, Calif.

Continuation-in-part of Ser. No. 5,156, Jan. 22, 1970, abandoned. This application June 25, 1971, Ser. No. 156,920

Int. Cl. E17d *1/16*

U.S. Cl. 137—13 **10 Claims**

The disclosure describes a method of reducing friction during turbulent flow of non-aqueous liquids through conduits by addition to the fluids of from 1 to 2,000 ppm of a novel block polymer comprising chains of a block polymer having the formula A-B wherein A is a high molecular weight polymer block soluble in the hydrocarbon liquid and B is a low molecular weight polymer block substantially less soluble in the fluid.

3,687,149

DEPRESSURING SYSTEM FOR RELIEVING TANK ANCHOR BOLT LOAD IN CASE OF FIRE

Ivan Lee Wissmiller, Glen Ellyn, Ill., assignor to Chicago Bridge & Iron Company, Oak Brook, Ill.

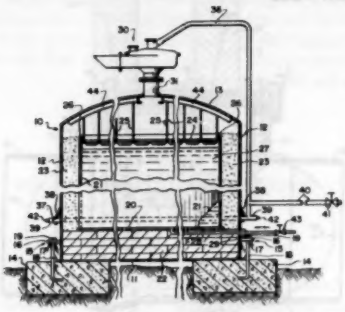
Filed Jan. 11, 1971, Ser. No. 105,409

Int. Cl. F16k *17/38*

U.S. Cl. 137—72 **8 Claims**

An improvement in a tank for storage of a product or material at superatmospheric pressure which effects internal

pressure relief, and thereby prevents the tank from rising off the foundation, when the anchor means is subjected to heat which causes failure of, or a serious loss of strength in, all or part of the anchor means. A thermally responsive sensor means is positioned in proximity to means anchoring the tank



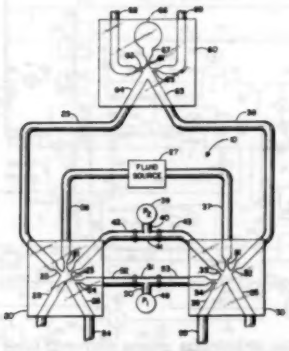
to the foundation. A pressure relief valve is mounted on the tank communicating with the interior thereof. Application of heat to the thermally responsive sensor actuates means to open the pressure relief valve and thereby reduce the pressure therein. With the pressure thus reduced the tank remains on the foundation even when the anchor means fails.

3,687,150

PROPORTIONAL FLUIDIC GAIN CHANGER

Michael J. Hoglund, Blaine, Minn., assignor to Honeywell Inc., Minneapolis, Minn.

Filed Aug. 10, 1970, Ser. No. 62,246
Int. Cl. F15c *1/14*
U.S. Cl. 137—81.5 **2 Claims**



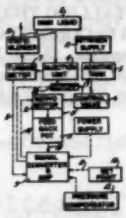
A fluid gain changer comprising two proportional fluid amplifiers. Fluid is supplied at oppositely varying pressures to an input port of the first amplifier and an input port of the second amplifier. In both amplifiers the input fluid along with a first biasing fluid and a second biasing fluid acts upon a fluid source. The circuit gain is changed by varying the first biasing fluid. The circuit output signal is produced between an outlet passage of the first amplifier and an outlet passage of the second amplifier.

3,687,151

SIGNAL CONVERTER AND AMPLIFIER FOR METERING ADDITIVE FLOW

Ronald O. Krause, Waukesha, Wis., and Kenneth J. Ayala, Winter Park, Fla., assignors to Nutrico, Inc., Milwaukee, Wis.

Filed Feb. 26, 1971, Ser. No. 119,086
Int. Cl. F16k *19/00*
U.S. Cl. 137—101.21 **9 Claims**



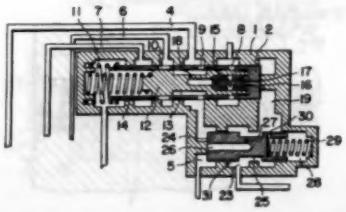
An additive liquid is metered to a flowing liquid through an adjustable linear valve. A turbine meter provides a pulse train proportional to flow in the main line. A servo system includes a servomotor positioning the valve and a differential amplifier circuit to control the motor. The amplifier circuit includes a first channel connected to the turbine meter to convert the pulse train to a related D.C. analog signal which is connected across a ratio selection potentiometer. The amplifier circuit includes a second channel connected to the feedback potentiometer which is energized from a properly scaled D.C. source through a pressure compensating variable resistor to compensate for different main line pressures. A differential summing amplifier is connected to sum the two signals and establish a corresponding polarity signal for energizing a polarity sensitive relay which connects the servomotor to properly position the valve.

3,687,152

CONTROL DEVICE FOR GRADUALLY INCREASING FLUID PRESSURE

Takashi Osaka, Kaga, Japan, assignor to Kabushiki Kaisha Komatsu Seisakusho, Tokyo, Japan

Filed July 21, 1970, Ser. No. 56,812
Claims priority, application Japan, July 23, 1969, 44/58171
Int. Cl. G05d *11/00*
U.S. Cl. 137—115 **3 Claims**



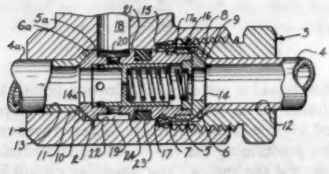
A control device for gradually increasing fluid pressure interposed between a pressure generating source and an actuator and comprising a cylindrical valve in which a pressure regulator valve and a quick return valve are fitted, wherein the said quick return valve is adapted to be held under its actuated condition at a position where the drain port of a back-pressure chamber is slightly opened by the quick return valve itself by allowing an urging force due to the fluid pressure inside of the passage communicating with the actuator acting on one side of the said valve to balance with an urging force due to biasing force of a spring combined with the fluid pressure inside of the

back-pressure chamber acting on the other side of the said valve, the said back-pressure chamber being located at the back of the cylindrical valve, thereby actuating the said quick return valve sensitively in response to even a slight pressure drop in the passage communicating with the actuator to drain off the fluid inside of the back-pressure chamber, so as to ensure that the cylindrical valve always effects its function to gradually increase fluid pressure.

3,687,153
SYSTEM FOR INSTALLING THREE-PORT FLUID ELEMENTS IN CONDUIT CIRCUITS

Harold Gold, 3645 Tolland Rd., Shaker Heights, Ohio

Filed May 20, 1971, Ser. No. 145,136
Int. Cl. G05d *7/01*
U.S. Cl. 137—112 **8 Claims**

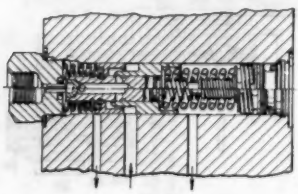


This invention relates to the construction of three port fluid circuit elements such as pressure regulating valves, pressure selectors and the like. The construction utilizes the element housing to form a conduit fitting seat-insert. The form thereby permits the circuit element to be installed within a conduit fitting such as a union type Tee.

3,687,154
PRESSURE-REGULATING AND CUT-OFF VALVE FOR FUEL-OIL PUMPS

Jorgen Hartvig Petersen, Nordborg, and Ingvard Mosby Madsen, Sonderbogg, both of Denmark, assignors to Danfoss A/S, Nordborg, Denmark

Filed Dec. 10, 1970, Ser. No. 96,720
Claims priority, application Germany, Dec. 16, 1969, P 19 62 975.5
Int. Cl. G05d *11/00*
U.S. Cl. 137—116 **1 Claim**

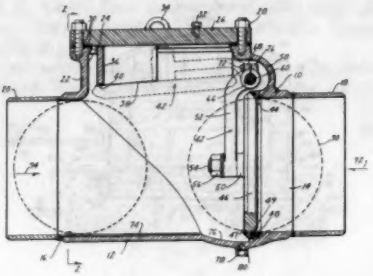


The invention relates to a pressure regulating and cut-off valve for fuel pumps which includes a setting piston and a combination of two pistons for regulating the pressure outlet between predetermined pressure levels. A pair of springs are provided for resisting movement of the setting piston which are arranged in parallel and have different rectilinear spring rates. The providing of this pair of springs results in space saving, permits a wider adjustment range and is less affected by manufacturing tolerance deviations.

3,687,155
CHECK VALVE

Charles Wheatley, Tulsa, Okla., assignor to Charles Wheatley Company, Tulsa, Okla.

Filed March 5, 1970, Ser. No. 16,638
Int. Cl. F16k *15/03*
U.S. Cl. 137—268 **1 Claim**

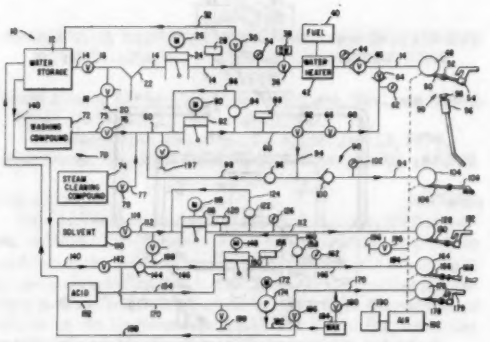


A check valve particularly constructed for permitting movement of a pipeline spheroid or "pig" therethrough in either direction. The valve is provided with means for reducing expansion of the spheroid upon entry thereof into the body of the valve and for reducing the spheroid to the pipeline size for facilitating passage or discharge of the spheroid from the valve.

3,687,156
MOBILE POWER WASHER

Paul R. Minich, Jr., Washington, D.C., and Donald E. Shaver, Fort Worth, Tex., assignors to C & M Manufacturing Company, Inc., Bethesda, Md.

Filed Aug. 6, 1970, Ser. No. 61,575
Int. Cl. F16k *49/00*
U.S. Cl. 137—334 **6 Claims**

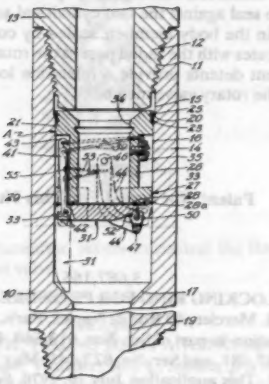


Self-contained mobile power washer system has a water storage tank, a pump, a heater which selectively heats or boils wash water. A steam wand and a pressure wash nozzle are fitted at a quick disconnect coupling at the end of a wash hose. Surfactants and steam cleaning compounds are separately stored and are selectively pumped through a single pump and additive line to the discharge line. Surfactant may be diverted to a scrub brush dispenser. Solvent and acid lines are separately provided, and a rinse line includes a wax injector. In one embodyment, proportioning pumps are driven by water flow to insure correct mixtures.

3,687,157
TRAP FOR DRILL PIPE

Jeff David Whitmer, Bloomfield, Mont.

Filed April 8, 1971, Ser. No. 132,311
Int. Cl. E21b *33/00*
U.S. Cl. 137—527 10 Claims

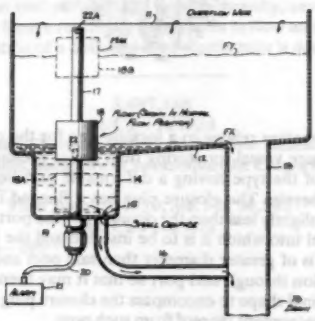


A valve is provided for mounting in the saver sub at the lower end of a Kelly shaft. The valve is capable of remaining closed while subjected to the weight of fluid in the Kelly shaft when the saver sub is disconnected from the top length of a drill pipe to permit another pipe length to be added. The valve will open when fluid under pressure is forced into the top of the Kelly shaft.

3,687,158
FLUID FLOW RATE SENSOR

Howard M. Layton, Pound Ridge, N.Y., assignor to Interlab, Inc., Pleasantville, N.Y.

Filed April 21, 1971, Ser. No. 136,052
Int. Cl. F16k *37/00*
U.S. Cl. 137—551 8 Claims

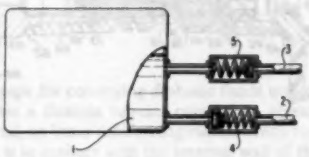


A process fluid flow-rate sensor adapted to actuate a control circuit or an alarm when the sensed rate falls below or exceeds the critical limits of a predetermined range. The sensor includes a leak chamber operating in conjunction with a main drain line, in an arrangement in which the fluid to be sensed first flows into the leak chamber. The leak chamber has an orifice through which fluid passes therefrom through a leak tube into the main drain line. The arrangement is such that should the flow rate be above a critical minimum value, the filling rate in the chamber will exceed the leakage rate thereof whereby after the leak chamber is completely filled, the fluid then directly passes into the main drain line, whereas when the flow rate falls below the critical minimum value, the leak chamber empties. Mounted for vertical movement in the leak chamber is a float provided with a switch actuator. The float, when the leak chamber undergoes depletion as a result of a flow rate below the minimum critical value, drops to a point at which the switch actuator trips an associated switch to actuate an alarm or control circuit. To sense a flow rate exceeding the maximum critical limit, the switch is arranged to respond to an elevated float position reflecting this condition.

3,687,159
SAFETY INSTALLATION AT A MOTOR VEHICLE TANK

Egon Schlor, Boblingen, and Herbert Duchrau, Sindelfingen, both of Germany, assignors to Daimler-Benz Aktiengesellschaft, Stuttgart-Unterturkheim, Germany

Filed June 29, 1970, Ser. No. 50,606
Claims priority, application Germany, July 4, 1969, P 19 33 960.7
Int. Cl. B65d *25/00*
U.S. Cl. 137—563 3 Claims

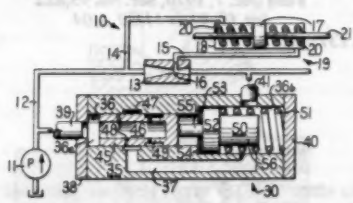


A safety installation for a motor vehicle fuel tank from which fuel is pumped through a fuel line to the engine which includes a check valve near the fuel tank in the fuel line that opens in the direction of the suction and which includes a check valve in the fuel return line, if such is provided, which opens in the direction of the suction and which includes a check valve in the fuel return line, if such is provided, which opens in the direction of the return feed.

3,687,160
THERMAL COMPENSATOR VALVE FOR DIFFERENTIAL PRESSURE DEVICES

Rodney R. Erickson, Joliet, Ill.; Ralph W. Matthews, Franklin, Wis., and Richard V. Sprangel, Peoria, Ill., assignors to Caterpillar Tractor Co., Peoria, Ill.

Continuation of Ser. No. 762,711, Sept. 26, 1968, abandoned.
This application Oct. 21, 1970, Ser. No. 82,837
Int. Cl. F23b *13/00*
U.S. Cl. 137—599.1 1 Claim



A hydraulic control system employing pressure differentials for control functions will maintain uniform pressure differentials over a broad temperature range by incorporation of the thermal compensator valve connected in parallel with the pressure differential generating device so the fluid flow through the device is controlled as a function of temperature to maintain a constant output from a device for a given set of physical conditions. The valve itself includes an inlet and an outlet with a flow-control spool disposed in a passage therebetween to meter the fluid and a thermal responsive element connected to position the spool in response to fluid tem-

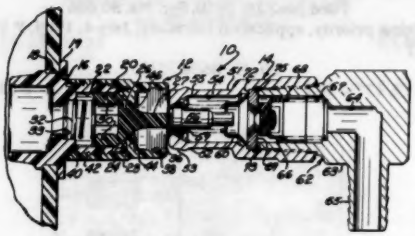
perature whereby the output of the device will remain essentially constant for a given physical set of conditions regardless of the temperature of the fluid.

3,687,161

QUICK CONNECT VALVE COUPLING

Robert M. Grguric, Parma, and Emerson J. Wasen, Cleveland, both of Ohio, assignors to The Hansen Manufacturing Company, Cayahoga County, Ohio

Filed June 1, 1970, Ser. No. 41,991
Int. Cl. F16l *37/28*
U.S. Cl. 137—614 **10 Claims**



A quick connect coupling having a socket portion adapted to be attached to a disposable beverage container with the parts of the socket being fabricated from two different plastics, one being flexible and the other rigid. The socket includes valving and a novel socket end connector sleeve which cooperates with a male plug that has both a plug valve and a check valve therein. The connector sleeve is retained on the socket body by cooperating interengaging ridges on both the sleeve and the body whereby the sleeve may be nonrotatably assembled. The connector sleeve further includes an integral portion which functions as a socket valve seat.

3,687,162

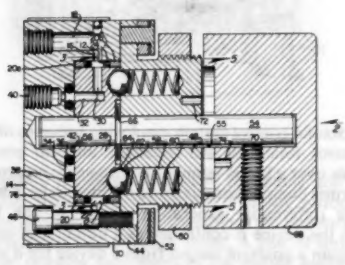
Patent Not Issued For This Number

3,687,163

SELECTOR VALVE WITH O-RING SEALS

William M. Nickels, Englewood, Colo., assignor to C. A. Norgren Co., Littleton, Colo.

Filed Dec. 7, 1970, Ser. No. 95,822
Int. Cl. F16k *11/00, 5/04*
U.S. Cl. 137—625.11 **8 Claims**



Selector valve, principally for use in fluid systems, such as pneumatic or liquid, characterized by a stationary body member having an inner cylindrical surface and angularly spaced radial ports terminating thereat, a rotary valve member disposed therewithin having an outer cylindrical surface and a radial port terminating thereat, the surfaces providing an annular space therebetween of uniform radial width or thickness, a cage disposed in the annular space and fixed to one of the members, and angularly spaced O-rings in the cage adapted to seal against the two cylindrical surfaces. An annular space in the body member, sealed by concentric O-rings, communicates with the radial port in the rotary valve member, and resilient detents provide a releasible lock for selectively indexing the rotary valve member.

3,687,164

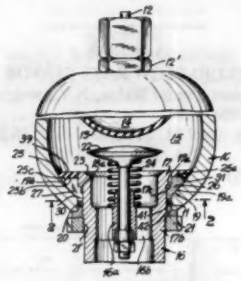
Patent Not Issued For This Number

3,687,165

LOCKING RING FOR PRESSURE VESSEL

Jacques H. Mercier, 49 Rue de Naples, Paris, France

Continuation-in-part of Ser. Nos. 613,660, Feb. 2, 1967, Pat. No. 3,537,481, and Ser. No. 822,445, May 7, 1969, Pat. No. 3,640,172. This application July 10, 1970, Ser. No. 53,923. The portion of the term of this patent subsequent to Nov. 3, 1987, has been disclaimed.
Int. Cl. F16b *55/04*; F16b *24/00*
U.S. Cl. 138—30 **6 Claims**



This invention relates to a locking ring for the closure plug of a pressure vessel for storing fluid under pressure and particularly of the type having a deformable partition such as a bladder therein. The closure plug has a flanged inner end of diameter slightly less than the diameter of the port of the pressure vessel into which it is to be inserted and the locking ring normally is of greater diameter than said port and is foldable for insertion through said port so that it may then be restored to its original shape to encompass the closure plug and restrain outward movement thereof from such port.

3,687,166

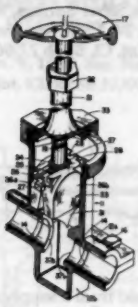
REPAIR VALVE

Paul E. Herrin, 2164 Meyer Place, Costa Mesa, Calif.

Filed Aug. 25, 1970, Ser. No. 66,737
Int. Cl. F16l *55/10*
U.S. Cl. 138—94 **5 Claims**

This disclosure relates to a control valve arranged for installation at a point along the length of a pipe whose fluid flow is to be controlled. The disclosed valve comprises a split housing that is hermetically sealed around a portion of the pipe and a pipe cutting arrangement carried within the housing on the flow control element then cuts away a section of the enclosed

pipe. The flow control assembly is then inserted into the cu-



taway area, and thereafter, serves to control the flow of fluid through the control valve.

3,687,167

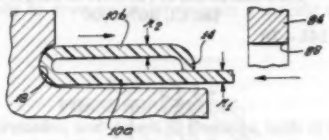
BEADED PLASTIC TUBING JOINT AND FABRICATION

William J. Longshaw, Whittier; Roy C. Sieson, Jr., Santa Paula, and James Ridenour, Huntington Beach, all of Calif., assignors to Pacific Western Extruded Products, Inc., Downey, Calif.

Division of Ser. No. 746,459, July 22, 1968, Pat. No. 3,557,275, which is a continuation-in-part of Ser. No. 555,153, Jan. 3, 1966, Pat. No. 3,494,643. This application Sept. 4, 1970, Ser. No. 69,995

Int. Cl. F16l *9/00*

U.S. Cl. 138—109 **4 Claims**



The disclosure concerns a method of forming a rigid plastic tube with an end portion that loops outwardly, reversely and inwardly to form a resiliently deformable hollow annular bead. Also, formation of a double walled plastic tube is described.

3,687,168

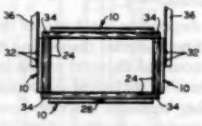
DUCT SYSTEM

James Webster Sherman, and James William Helmick, both of Toledo, Ohio, assignors to Johns-Manville Corporation, New York, N.Y.

Filed June 29, 1970, Ser. No. 50,595

Int. Cl. F16z *9/22*

U.S. Cl. 138—109 **10 Claims**



An aluminum extrusion molding with multiple flanges for gripping and supporting both duct board paneling and longitudinal support members. Duct structures are made of the above molding in combination with duct board paneling wherein a single piece of molding is formed into a duct board frame defining the periphery of the duct. The molding gripping flanges have extended beads for gripping the duct board which beads also enhance the seal between molding and duct board.

3,687,169

FLEXIBLE PIPE FOR CONVEYING FLUIDS, PARTICULARLY HYDROCARBONS

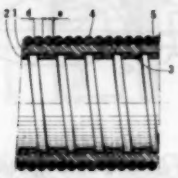
Remi Reynard, Montesson, France, assignor to Institut Francais Du Petrole, Des Carburants Et Lubrifiants, Rueil-Malmaison, France

Continuation-in-part of Ser. No. 678,357, Oct. 26, 1967, abandoned. This application July 16, 1970, Ser. No. 55,347

Claims priority, application France, Oct. 27, 1966, 6681871

Int. Cl. F16z *11/04*

U.S. Cl. 138—134 **12 Claims**



A flexible pipe for conveying diphasic fluids under pressure which includes a flexible tubular core of an elastomeric or plastic material, an inner reinforcing means which resists compression and is in contact with the internal wall of the tubular core and an external clamping means enclosing the tubular core. The internal reinforcing means and external clamping means subject the core to a compression not less than 50 kg/cm² and at least equal to the maximum internal pressure of the fluid conveyed in the pipe. The internal reinforcement means is preferably a helical winding of a metallic band or strip which is adapted to withstand compression. The external clamping means is, preferably, a metallic wire, strand, band or cable helically wound around the core.

3,687,170

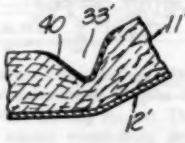
HEAT INSULATING ASSEMBLY

Joseph G. Malone, San Marino, Calif., and H. Morton Smith, Richmond, Ind., assignors to Industrial Insulations, Inc., San Gabriel, Calif.

Division of Ser. No. 761,156, Sept. 20, 1968, Pat. No. 3,615,149. This application Oct. 26, 1970, Ser. No. 83,865

Int. Cl. F16l *9/14*

U.S. Cl. 138—143 **5 Claims**



A heat insulating assembly for an enclosed space comprising a mat of fibers interlocked by thermosetting binder material at points of cross-over and bonded to heat reflecting foil. The previously fabricated laminated mat formed with hinging areas along selected portions thereof comprising fibers permanently locked assembled in greater density binder material polymerized to a greater degree than when the mat was first fabricated. The resulting mat product has a pronounced tendency to resume its original shape after being folded along its hinge axes. Accordingly, a properly tailored shell liner of this material tends to expand and retain its installed position against the interior walls of the shell. The material also provides an excellent heat insulating duct which can be used with or without a rigid duct.

3,687,171

DRIVE SHAFT FOR A WAVE-TYPE LOOM

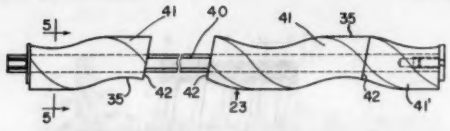
Edgar H. Strauss, Ruti, Zurich, Switzerland, assignor to Ruti Machinery Works, Ltd., formerly Gaspar Honegger, Ruti, Zurich, Switzerland

Filed March 9, 1970, Ser. No. 17,725

Claims priority, application Switzerland, March 18, 1969, 4026/69

Int. Cl. D03d 47/26

U.S. Cl. 139—12 10 Claims



A drive shaft for use on a wave-type loom which is adapted to swing reed teeth that are arranged side by side along a pivot shaft parallel to the drive shaft and which has a helical exterior or profile against which the reed teeth bear so that the teeth are swung about the pivotal shaft when the drive shaft rotates, the drive shaft comprising an inner core of constant cross-section extending over its length and a plurality of elements which surround the core. The elements are arranged in a row in the longitudinal direction of the core and bear against each other. Also, the elements are rotationally connected to the core so that they will rotate with the core.

3,687,172

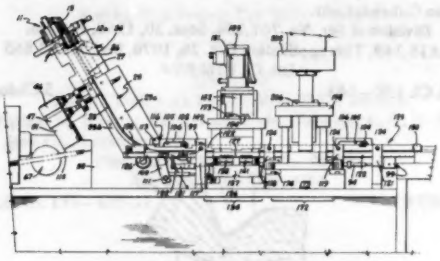
LEAD STRAIGHTENER AND METHOD

Claus P. J. Suverkropp, Sunnyvale, Calif., assignor to Signetics Corporation, Sunnyvale, Calif.

Filed Oct. 7, 1970, Ser. No. 78,647

Int. Cl. B21f 1/02

U.S. Cl. 140—147 13 Claims



A lead alignment apparatus and method for aligning leads of an integrated circuit package. A magazine feed automatically feeds circuit packages into a track. Circuit packages on the track are moved one by one along the track by a walking beam. At an alignment station the leads of the circuit package engage one comb which bends the leads in one direction so they are in alignment with each other. Subsequently the leads are inserted into a second comb which maintains their alignment with respect to each other and bends the leads so that they are generally perpendicular to the length of the circuit package. At a restrike station the circuit package leads are bent so that they all depend from the circuit package at the same predetermined angle with respect to the width of the circuit package. The circuit packages with the aligned leads are then automatically fed into shipping tubes.

3,687,173

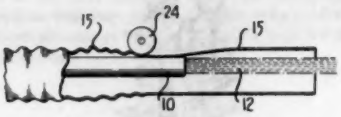
PROTECTIVE SHEATH FOR FLUID TRANSFER

Edward D. Proctor, Riverdale, Md., assignor to Bowles Fluidics Corporation, Silver Springs, Md.

Filed Jan. 24, 1968, Ser. No. 700,278

Int. Cl. B63b 27/00

U.S. Cl. 141—1 9 Claims



In the transfer of fluid from a supply station to one or more receiving stations separated from the supply station by discharging the fluid in the form of a high-velocity, well-defined stream toward each receiving station from the supply station through the open space therebetween, an extensible-collapsible sleeve of thin, rugged, lightweight film is fed out over the stream during discharge thereof as a protective sheath therefor. The sleeve is of greater diameter than the stream and is supported by the moving boundary layer of air adjacent the periphery of the stream. Prior to conclusion of the fluid transfer operation, the sleeve is returned to a collapsed condition for storage until the next transfer operation is begun.

3,687,174

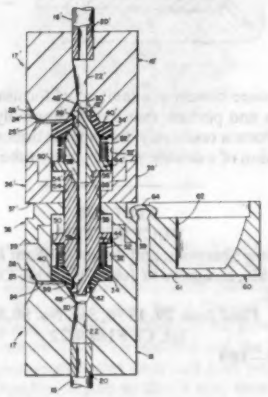
PRESSURIZED DISPENSING PACKAGE

Sherman E. Palan, 5 Moose Hill St., Sharon, Mass.

Filed March 24, 1971, Ser. No. 127,674

Int. Cl. B67c 3/00

U.S. Cl. 141—20 21 Claims



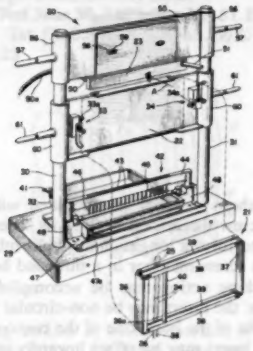
A pressurized dispensing package of the type which includes an upstanding material dispensing stem having an actuator assembly mounted thereon which includes an annular resilient sealing member including a movable valving member, the valving member includes a frusto-conical actuating surface and a refill passage, a portion of which extends angularly of the direction of movement of the valving member to a port in the actuating surface. The sealing member is flexibly movable in response to movement of the valving member between a first position in which the dispensing passage is open and the sealing member seals the refill passage from the stem and a second position in which the refill passage is open and the sealing member seals the assembly dispensing passage from the stem.

3,687,175

APPARATUS FOR FILLING THIN TUBULAR CONTAINERS WITH A LIQUID

Victor Stephen Babey, 151 Canboro Rd. W., Welland, Ontario, Canada

Filed Nov. 9, 1970, Ser. No. 87,796
Int. Cl. B65b *31/02*
U.S. Cl. 141—59 11 Claims



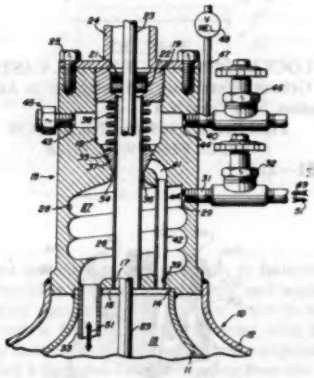
This specification discloses an apparatus for filling cartridges of tubular straw-like construction with liquid such as animal semen whereby a vacuum manifold is set over the ends of the plurality of straws to draw out entrapped air from the straws when the straws have been set down into a tray of the liquid, thereby to draw up under vacuum a specific quantity thereof.

3,687,176

PHASE SEPARATOR

Joseph F. Fernandes, and Anson S. Coolidge, both of Dayton, Ohio, assignors to United Aircraft Products, Inc., Dayton, Ohio

Filed March 18, 1970, Ser. No. 20,626
Int. Cl. B65b *31/04*; B67c *3/02*
U.S. Cl. 141—59 11 Claims



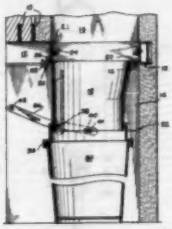
A body providing an interior helical flow path for separation of fluid in the vapor phase from a flowing liquid stream. Separate passages lead from the flow path and from one end of the body and in one of these is venturi means exerting an eduction influence on the other passage.

3,687,177

RUBBISH DISPOSAL INSTALLATION

Robert H. Wilder, 708 Walker Ave., Baltimore, Md.

Filed Feb. 17, 1971, Ser. No. 115,990
Int. Cl. B65b *1/04*, *3/04*
U.S. Cl. 141—392 4 Claims



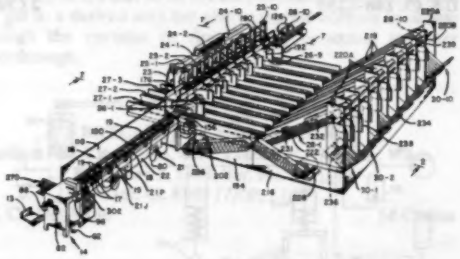
A rubbish disposal means to replace Class II incinerators especially as used in garden type apartment buildings including a readily removable and replaceable hopper means having a means to closely but releasably engage successive replaceable rubbish collecting containers.

3,687,178

LUMBER SORTING METHOD

Alexander J. Golick, 7518 23rd Ave. N. W., Seattle, Wash.; Ernest D. Giuseponi, 7305 Coral Lane, Stockton, Calif., and Arthur J. Randolph, P.O. Box 1541, Santa Rosa, Calif.

Division of Ser. No. 850,911, Aug. 18, 1969, Pat. No. 3,566,936, which is a division of Ser. No. 515,697, Dec. 22, 1965, Pat. No. 3,502,123. This application March 1, 1971, Ser. No. 119,953
Int. Cl. B27b *1/00*
U.S. Cl. 143—157 E 3 Claims



A lumber cutting and sorting method wherein the lumber is cut into various predetermined lengths by abutting them against gage stops while making the cut. The gage stops have associated sensing means controlling downstream lateral deflector means for sorting the lumber by thickness, width, and/or grade. Crossed plural conveyors remove the cut lumber after sorting.

3,687,179

ELECTRICALLY OPERATED SCREW DRIVER

Katsuyuki Totsu, No. 4-7, 3-chome, Oshiage, Sumida-ku, Tokyo, Japan

Filed Feb. 25, 1970, Ser. No. 14,034
Claims priority, application Japan, Aug. 6, 1969, 44/61687
Int. Cl. B25b *21/00*
U.S. Cl. 144—32 7 Claims

This specification discloses an electrically operated screw driver comprising in combination, a tool handle accommodating a compact electric motor therein, a driver shank connected to the electric motor and a clutch mechanism arranged

therebetween for transmission of the manual driving power from the tool handle to the driver shank by which a substantial part of the screw fastening operation is carried out automatically by an electric power and an ultimate tightening operation is ensured manually with the same screw driver while confirming the degree of tightness.

3,687,180

APPARATUS FOR BREAKING-UP SOLID, POROUS AND ESPECIALLY VEGETABLE BODIES

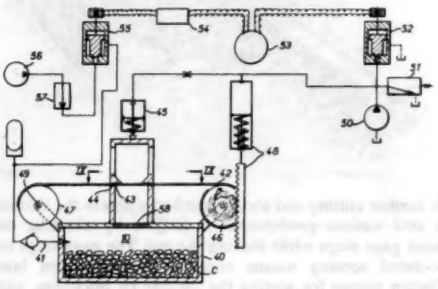
Daniel Michalon, Saint-Etienne (Loire), France, assignor to Centre Stephanois De Recherches Mecaniques Hydromecanique Et Frottement, Saint-Etienne, France

Filed Aug. 1, 1969, Ser. No. 846,666

Claims priority, application France, Aug. 21, 1968, 68163614; July 16, 1969, 6924170

Int. Cl. B02b *3/12*

U.S. Cl. 146—255 **2 Claims**



Apparatus for breaking-up solid, porous and especially vegetable bodies, in particular for the purposes of decortication, shredding or splitting, in which a chamber filled with a liquid and/or gaseous fluid is adapted to receive said bodies, together with means for applying a variation of fluid pressure inside said chamber, and in which said variation of pressure is cyclic so as to apply a vibratory action which progressively fatigues said bodies. The cyclic pressure variation comprises at least three cycles, while the differential amplitude, namely the difference between the minimum and maximum pressures of the cycles, exceeds three bars, the number of cycles and the differential pressure amplitude being chosen in the inverse ratio with each other for the same result.

3,687,181

FASTENER AND METHOD OF MAKING THE SAME

Jan R. Coyle, San Dimas, Calif., assignor to Threadline Fastener Corporation, Covina, Calif.

Division of Ser. No. 664,804, Aug. 31, 1967, Pat. No. 3,497,890. This application Aug. 4, 1972, Ser. No. 870,756

Int. Cl. F16b *39/22*

U.S. Cl. 151—14 R **6 Claims**

A strip of sheet material is embossed with ribs of the character of screw threads on both of its faces and then the strip is rolled to form a longitudinally split tubular insert for use to retain a screw member in a threaded bore of a workpiece. Self-locking action may be accomplished in various ways as follows: the insert may be non-circular for binding action on the walls of the bore; one of the two confronting ends of the tubular insert may be offset inwardly to resist relative rotation between the insert and the enclosed screw member; one of the confronting ends of the tubular insert may be offset outwardly to resist relative rotation between the insert member and the bore in which it is mounted; the tubular insert may be distorted slightly vertically for misalignment of the turns of either or both the internal and external screw threads at the confronting edges of the split insert; with the insert of normal configuration, one of the internal and external screw threads may be positioned for misalignment at the longitudinal split of the insert; with the turns of a screw thread of the insert misaligned at the confronting edges of the insert, at least a portion of the longitudinal split of the insert may be inclined relative to the axis of the insert in a direction for interference between the confronting edges when restoring the alignment tends to move the confronting edges relative to each other, the result being a self-locking action; and, with the turns of one of the screw threads misaligned at the longitudinal split of the insert the confronting edges of the insert along the longitudinal split may be shaped and dimensioned to interlock to oppose the relative longitudinal movement of the two edges that is required for alignment of the misaligned turns thereby to provide self-locking action when the insert is placed into service.

3,687,182

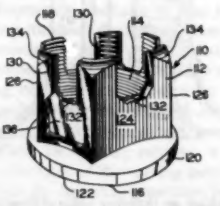
SELF-LOCKING ONE-PIECE METAL CASTLE NUT

David W. Grimm, Watchung, N.J., assignor to Amerace Esna Corporation, New York, N.Y.

Filed Dec. 9, 1969, Ser. No. 883,439

Int. Cl. F16b *39/02, 39/28*

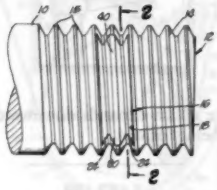
U.S. Cl. 151—21 B **9 Claims**



A thin-walled metal castle nut including circumferentially spaced slots adjacent one end thereof, an integral flange ad-

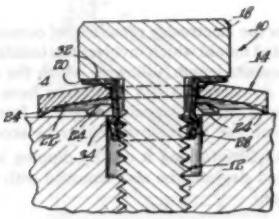
jacent the other end thereof, a thread extending from end to end thereof and portions of the wall permanently deformed radially inwardly at axial locations between the slots and the flange, and preferably in axial alignment with the slots.

3,687,183
SELF-LOCKING SCREW THREADED FASTENER
Robert F. Rohm, Fullerton, Calif., assignor to Threadline Fastener Corporation, Covina, Calif.
Filed June 30, 1970, Ser. No. 51,215
Int. Cl. B21h *3/08*; F16b *39/30*
U.S. Cl. 151—22 **7 Claims**



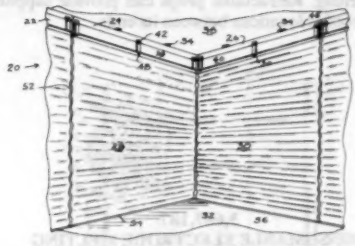
A self-locking fastener in which a portion of less than 180° circumferential extent of the screw thread of the fastener is changed in pitch diameter to achieve an interference fit. If it is an external screw or male thread, it is increased in pitch diameter; but if it is an internal screw or female thread, it is decreased in pitch diameter. In both instances, the cross sectional width of the screw thread is increased at any given diameter, and the width of the crest of the screw thread is increased without change in the crest diameter of the screw thread. In addition, improved locking is obtained, particularly at relatively high temperatures, by constructing the portion as an insert of a metal having a coefficient of expansion which is substantially the same or higher than the material of the fastener.

3,687,184
FASTENER UNIT
David P. Wagner, Elmhurst, Ill., assignor to Illinois Tool Works Inc., Chicago, Ill.
Filed Dec. 30, 1969, Ser. No. 889,154
Int. Cl. F16b *39/26*
U.S. Cl. 151—37 **7 Claims**



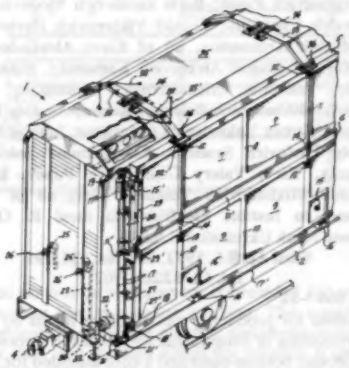
The present invention relates generally to fastener units of the type comprising pre-assembled screw and washer members, and more particularly to fastener units in which the washer element is free from direct contact with the screw member. The fastener unit disclosed herein comprises a screw member having a threaded shank extending from the clamping side of a screw head and a generally tubular washer retainer member encircling and peripherally impinging the screw shank in the vicinity of the clamping surface of the screw head. An apertured washer member encircles the tubular member provides shoulder means beneath the washer to prevent unauthorized separation of the washer and screw member.

3,687,185
FIRE FIGHTING APPARATUS
Isadore Singer, Chicago, Ill., assignor to Singer Safety Products Inc., Chicago, Ill.
Filed June 22, 1970, Ser. No. 48,102
Int. Cl. E05f *15/20*
U.S. Cl. 160—1 **6 Claims**



A fire fighting apparatus for confining a fire to an immediate area defined by a plurality of fire retardant curtains which are dropped from container cabinets upon actuation of a release mechanism which may be triggered manually or coincidentally with the actuation of a fire extinguishing device associated with the mechanism to be patented. In a preferred form, a plurality of fire retardant curtains are stored in a plurality of modular cabinets which are suspended from a ceiling covering the area to be protected. The release mechanism which allows the curtains to drop from one cabinet is connected to the release mechanism of adjacent cabinets for simultaneous operation of all associated cabinets. In use, operation of an automatically actuated fire extinguishing system, such as discharge of carbon dioxide to the area to be protected, causes a gas pressure drop serving to actuate the trigger mechanism which allows each door lock to move toward a released position to which it is normally biased. In the extended position, the curtains have their edges disposed adjacent one another so as not only to confine the extinguishing gas to a desired area but also to permit workers to escape through the curtains or fire fighting personnel to enter therethrough.

3,687,186
BOXCAR FULL-SIDE CLOSURE
Hamilton Neil King Paton, 4603 118th S.E., Bellevue, Wash.
Filed May 2, 1969, Ser. No. 821,384
Int. Cl. E05f *11/00*, *11/08*
U.S. Cl. 160—188 **14 Claims**



Cooperating upper and lower closure sections for each side of a vehicle, such as a boxcar, extend over the full length of the vehicle. A hoisting line, screw, chain or fluid pressure jack

raises the lower closure section into overlapping relationship with the upper closure section and then both closure sections conjointly above the side opening. The lower section is guided by cam tracks to move outward as it moves upward and the upper edge of the upper closure section is guided by swinging arms as the sections move above the vehicle body. Alternatively, the lower closure section can swing downward and the upper closure section can be raised edgewise upward to clear the side opening. Retractable props can provide support for the vehicle roof at locations between its ends.

3,687,187

CONSUMABLE ELECTRODE MELTING

Joseph W. Tommaney, Valencia, Pa., and Jack Preston, Schenectady, N.Y., assignors to Allegheny Ludlum Industries Inc., Pittsburgh, Pa.

Continuation-in-part of Ser. No. 616,700, Feb. 16, 1967, abandoned. This application March 16, 1971, Ser. No. 124,980

Int. Cl. B22d *27/02*

U.S. Cl. 164—52 **6 Claims**

A method for producing a metal ingot having a diameter of at least 17 inches, which comprises the steps of: arranging a consumable electrode within a consumable electrode furnace structure; connecting the consumable electrode to the positive terminal of a direct current power supply; establishing a partial pressure of from 30 to 2,000 microns of non-oxidizing gas within the furnace structure; melting the consumable electrode in the partial pressure of from 30 to 2,000 microns by passing an electrical current of at least 5,000 amperes between the consumable electrode and a second electrode which is connected to the negative terminal of said direct current power supply; and casting the molten metal in a mold having a diameter of at least 17 inches.

3,687,188

METHOD AND DEVICE FOR PRODUCING METAL HOLLOW INGOTS BY ELECTROSLAG REMELTING

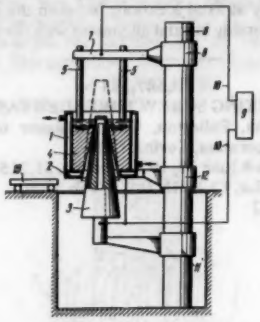
Boris Evgenievich Paton; Boris Izrailevich Medovar; Leonty Vasilievich Chekotilo; Leonid Viktorovich Pavlov; Viktor Leonidovich Artamonov, all of Kiev; Alexander Borisovich Vernik; Leonid Alexeevich Kamensky, both of Elektrostal; Veniamin Alexandrovich Ishunkin, Moscow; Alexandr Mikhailovich Belenky, Kazan; Anatoly Ivanovich Shevtsov; Semen Yakovlevich Grinshpon, both of Kulebaki; Anatoly Pavlovich Sysenko, Kiev; Rudolf Solomonovich Dubinsky, Kiev; Valery Georgievich Popov, Kiev, and Alexandr Mikhailovich Toschev, Kiev, all of U.S.S.R., assignors to Institut Elektrosvarki ineni E. O. Patona akademii Nank Ukrainskoi U.S.S.R.

Filed April 6, 1971, Ser. No. 131,695

Int. Cl. B22d *27/02*

U.S. Cl. 164—52 **7 Claims**

A method for producing metal hollow ingots by the electroslag remelting of consumable electrodes in a cooled mould with a circular bottom-plate and a core intended for forming a cavity in the ingot. According to the present invention the core expanding downwards is extracted from the ingot being formed in the direction opposite to that in which the ingot is being built-up. A device for implementing the above method is also disclosed, the said device being characterized in that it is



fitted with a core which expands downwards and exceeds in length the ingot being formed.

3,687,189

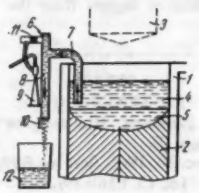
METHOD OF THE ELECTROSLAG REMELTING OF CONSUMABLE ELECTRODES

Ivan Mikhailovich Zuev, Leningradskoi oblasti, ulitsa Proletarskaya, 131, kv. 40; Anatoly Vasilievich Gorsky, Leningradskoi oblasti, Tosnensky pereulok, 30, kv. 8, both of Kolpino; Boris Izrailevich Medovar, bulvar Lesi Ukrainki, 2, kv. 8, Kiev; July Georgievich Emelyanenko, ulitsa Darvina, 5, kv. 5, Kiev; Jury Vadimovich Latash, ulitsa Artema, 55, kv. 23, Kiev, and Alexei Georgievich Bogachenko, ulitsa Miljutenko, 15/2, kv. 141, Kiev, all of U.S.S.R.

Filed April 21, 1971, Ser. No. 135,892

Int. Cl. B22d *27/02*

U.S. Cl. 164—52 **4 Claims**



A method for the electroslag remelting of consumable electrodes in a cooled mould which involves the building-up of the ingot of the requisite length, following which the consumable electrodes are de-energized and withdrawn from the molten slag. The exterior of the deposited ingot is freed from the liquid slag, which can be removed either by scooping or by flusing or, finally, by forcing it out by dipping in discarded metal. The liquid slag may be also removed with the aid of a siphon appliance.

3,687,190

METHOD OF REGULATING THE SUPPLY OF MOLTEN METAL TO A CASTING CAVITY

Ilario Properzi, Via Cosimo del Fante, 10, Milan, Italy

Division of Ser. No. 705,833, Feb. 15, 1968, abandoned. This application Aug. 21, 1970, Ser. No. 66,045

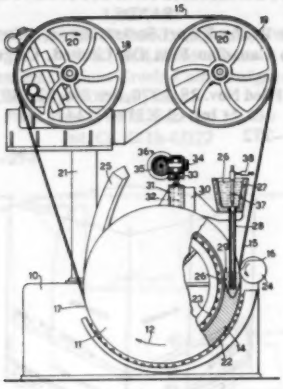
Claims priority, application Italy, March 15, 1967, 13774 A/67

Int. Cl. B22d *11/06*

U.S. Cl. 164—87 **10 Claims**

In a continuous casting machine a rotatable wheel is provided with a circumferential groove in its outwardly directed circumferential edge face. A metal tape covers the groove over a portion of arc and defines therewith a cavity for molten

metal. Cooling means cools the wheel and thereby the molten metal in the cavity. Supply means is associated with the wheel and discharges additional molten metal into the cavity below



the level of molten metal already contained therein at a rate which is a function of the flow resistance opposed to such discharge by the molten metal in the cavity.

3,687,191

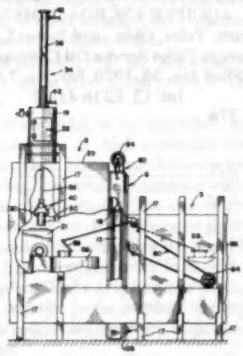
VACUUM CASTING FURNACE

Gerald W. Hulit, Ridgewood; Frederick A. Greenburg, Denville; Edward Pirkey, Dover, and Stanley C. Tingquist, Sparta, all of N.J., assignors to Howmet Corporation

Filed June 18, 1969, Ser. No. 834,416

Int. Cl. B22d 27/16

U.S. Cl. 164—258 **2 Claims**



This disclosure relates to vacuum furnaces for pouring molds and includes a furnace apparatus having an interior capable of being evacuated and readily divided into a loading chamber and a pouring chamber with trackway means for transporting a mold first into the load chamber and then into the pouring chamber. Both chambers have access doors at opposite ends of the furnace and one of these doors provides access into the chambers to a platform which rides on the trackway. The furnace includes a further vacuum-holding chamber for housing the divider door so that it can be opened without breaking a vacuum on the other furnace chambers.

3,687,192

REGENERATIVE HEAT EXCHANGERS

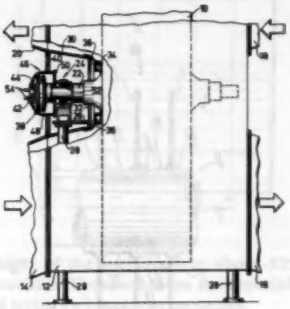
Birger Pettersson, Alta, Sweden, assignor to Svenska Rotor Maskiner Aktiebolag, Nacka, Sweden

Filed June 30, 1970, Ser. No. 51,142

Claims priority, application Great Britain, July 8, 1969, 34,288/69

Int. Cl. F28d 19/04

U.S. Cl. 165—8 **6 Claims**



A rotary regenerative heat exchanger having a low speed/high torque motor for driving the rotatable part of the heat exchanger. A rotatable member of the motor is coaxial with and coupled to a trunnion on the rotatable heat exchanger part and stationary motor member is connected to the stationary element of a bearing for the trunnion in order to transfer reaction torque forces to the supporting structure for the bearing.

3,687,193

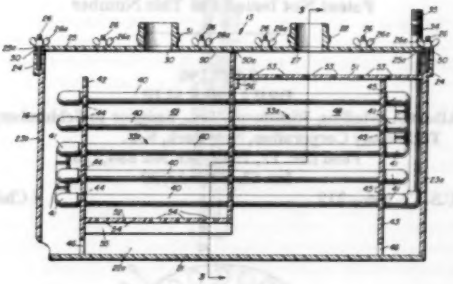
LOBSTER TANK INCLUDING HEAT EXCHANGE MEANS

Daniel James Wright, 80 Evans St., Osterville, Mass.

Filed Dec. 4, 1970, Ser. No. 95,289

Int. Cl. F28d 7/00

U.S. Cl. 165—161 **6 Claims**

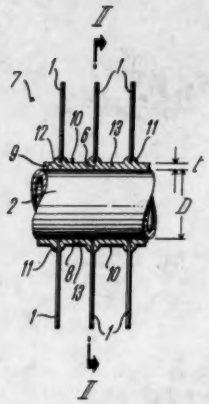


Artificial environment apparatus is provided for maintaining crustaceans live in a saline solution. The apparatus includes a receptacle for saline solution and crustaceans and an exchanger tank unit through which the solution is circulated and in which plastic refrigerant circulating tube means is disposed for maintaining the solution in the receptacle at a predetermined temperature and in an uncontaminated condition.

3,687,194
RIBBED PIPE UNIT

Gunter Scholl, Casa Rosina, 6549 Pianezzo/Pando, Switzerland

Filed June 4, 1970, Ser. No. 43,534
Claims priority, application Germany, June 13, 1969, P 19 30 040.4; July 31, 1969, P 19 38 928.7; Feb. 16, 1970, P 20 06 893.3
Int. Cl. F28f 21/00
U.S. Cl. 165—180 8 Claims



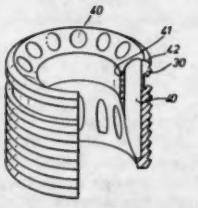
The production of ribbed heating pipes and ribbed pipe units in which ribs consisting of plates of sheet metal which are provided with recesses of a size and shape in accordance with that of the outer surface of the core pipe or pipes are applied tightly upon the latter so as to project radially therefrom. The edges of these recesses in the rib plates are additionally provided with grooves. A metal, for example, aluminum, is then cast in a suitable mold between the adjacent rib plates so as to form jacket sections around the core pipe in which the rib plates are embedded. This metal also penetrates through and fills out the grooves in the edges of the apertures of the rib plates and thereby connects the adjacent jacket sections to each other.

3,687,195
Patent Not Issued For This Number

3,687,196
DRILLABLE SLIP

Albert A. Mullins, Richmond, Tex., assignor to Schlumberger Technology Corporation, New York, N.Y.

Filed Dec. 12, 1969, Ser. No. 884,710
Int. Cl. E21b 23/00
U.S. Cl. 166—217 4 Claims

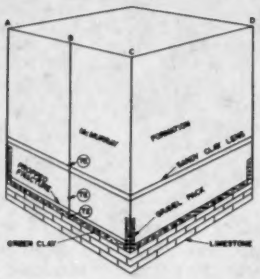


A drillable slip having a generally wedge-shaped cross-section with a plurality of longitudinally extending perforations or holes confined at least partially within the cross-section to provide weakened sections to facilitate breakage of the slip into a plurality of segments.

3,687,197
METHOD FOR EXTRACTING BITUMEN FROM TAR SANDS

David Arthur Redford, Fort Saskatchewan, Alberta, Canada, assignor to Canadian Fina Oil Limited, Calgary, Alberta, Canada

Filed Nov. 25, 1970, Ser. No. 92,749
Int. Cl. E21b 43/24
U.S. Cl. 166—272 2 Claims

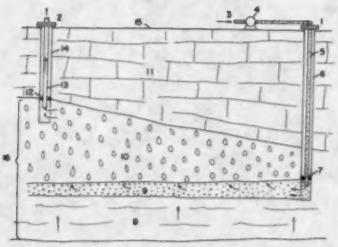


Hot caustic solution is injected into an unconsolidated silty lens extending through the Athabasca bitumen reservoir between injection and production wells. Over a period of time part of the lens is rendered movable. The mud is forced to the production well and removed therefrom, leaving a steam-permeable communications zone extending between the wells. Steam can then be injected into the zone to heat the bitumen and form an emulsion which can be forced to the production well. In this way, bitumen is recovered at the surface.

3,687,198
HIGH DENSITY MISCIBLE FLUID INJECTION WITH AQUIFER ENCROACHMENT

Charles L. Hearn, Tulsa, Okla., and James L. Relph, Midland, Tex., assignors to Cities Service Oil Company

Filed Jan. 30, 1970, Ser. No. 7,060
Int. Cl. E21b 43/22
U.S. Cl. 166—274 5 Claims



A method of controlling water influx and improving oil recovery by injecting a high density miscible fluid, such as carbon dioxide, at the water-oil contact is described. The fluid must be miscible with the oil and must have a density intermediate between that of water and the reservoir oil. A sufficient amount of fluid is injected to form a bank between the oil and encroaching water. As oil is produced from the reservoir, water influx from the aquifer displaces this bank of fluid, which in turn displaces the oil. Due to the miscibility of the fluid with the reservoir oil, a low residual oil saturation

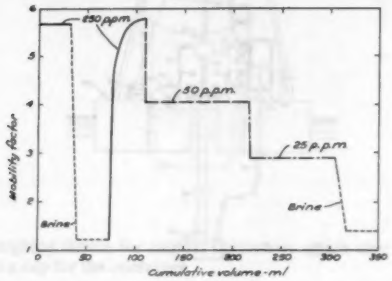
remains behind the displacement front. The density of the fluid is intermediate to that of the water and the reservoir oil restricting the bank of fluid therebetween and allowing little tendency for the fluid to bypass or override the oil and migrate to the structurally higher portions of the reservoir.

3,687,199

PROCESS FOR THE SECONDARY RECOVERY OF PETROLEUM

Robert R. Jennings, Walnut Creek, Calif., assignor to The Dow Chemical Company, Midland, Mich.

Filed May 7, 1970, Ser. No. 35,486
Int. Cl. E21b *43/22*
U.S. Cl. 166—274 **7 Claims**



Crude oil is recovered from a subterranean oil bearing formation by injecting an initial slug of an aqueous flooding medium containing a dissolved polymeric agent into the formation to displace the oil toward at least one output well communicating with the formation and then following the initial slug with a secondary aqueous slug having a dissolved polymer concentration of less than about one-third that of the initial slug but not in excess of 100 p.p.m.

3,687,200

METHOD FOR CONTROLLING FLOW OF AQUEOUS FLUIDS IN SUBTERRANEAN FORMATIONS

Willis G. Routson, Walnut Creek, Calif., assignor to The Dow Chemical Company, Midland, Mich.

Filed June 8, 1970, Ser. No. 44,609
Int. Cl. E02d *3/14*; E21b *21/04*, *43/22*
U.S. Cl. 166—275 **10 Claims**

The formation of colloidal, water-insoluble, inorganic compounds in the presence of high-molecular-weight organic polyelectrolytes in dilute aqueous solution provides aqueous compositions having improved resistance to flow through porous subterranean formations. The use of these compositions provides a method for diminishing or shutting off water production in oil wells, for controlling the mobility of aqueous fluids in zones of higher permeability in such formations and for plugging subsurface leaks as in earthen dams. This method provides a useful adjunct in the control of thief zones in oil well drilling and in secondary recovery of petroleum by water flooding techniques.

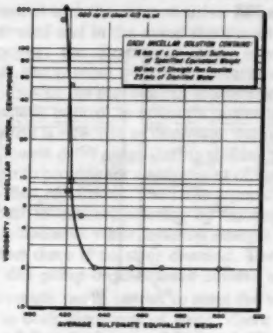
3,687,201

OIL RECOVERY PROCESS USING MICELLAR SOLUTIONS OF DESIRED VISCOSITY

Marion O. Son, Jr., Littleton, Colo., and William C. Tosch, Parker, Colo., assignors to Marathon Oil Company, Findlay, Ohio

Continuation-in-part of Ser. No. 659,806, Aug. 10, 1967, abandoned. This application Jan. 4, 1971, Ser. No. 103,460
Int. Cl. E21b *43/22*
U.S. Cl. 166—275 **8 Claims**

The viscosity of micellar solutions is varied within a range permitted by the viscosity of the hydrocarbon-external phase by utilizing as a surfactant a low average equivalent weight petroleum sulfonate (e.g. about 350) to obtain a relatively high viscosity micellar solution and increasing the average



equivalent weight of the surfactant to about 525 to obtain decreased viscosities. These solutions are especially useful in secondary and tertiary oil recovery processes.

3,687,202

METHOD AND APPARATUS FOR TREATING WELLS

Carter R. Young, Dallas, and Leonard McCasland, Carrollton, both of Tex., assignors to Otis Engineering Corporation, Dallas, Tex.

Filed Dec. 28, 1970, Ser. No. 101,625
Int. Cl. F21b *21/00*, *37/00*
U.S. Cl. 166—305 **33 Claims**

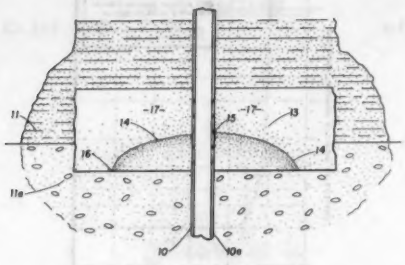
Apparatus and method for producing an area or region of substantially reduced pressure in a well casing to suction purge perforations in the casing at the producing zone for clearing the perforations, removing detritus and the like. The apparatus is adapted for use with hydraulic set packers without causing premature setting thereof, and is designed to permit injection of treating fluids or the like into the well formation, if desired, prior to establishing production from the well. All operations are carried out with the flow conductor in place and without removing it from the well casing.

3,687,203

METHOD OF INCREASING WELL PRODUCTIVITY

William T. Malone, Comanche, Okla., assignor to Halliburton Company, Duncan, Okla.

Filed July 23, 1970, Ser. No. 59,777
Int. Cl. E21b *43/26*
U.S. Cl. 166—308 **4 Claims**



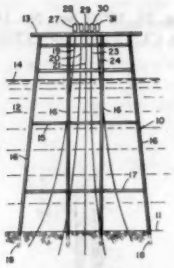
A substantially vertical fracture in a well formation is partially filled to prevent healing of the fracture, and the unfilled portion of the fracture is utilized for production flow.

3,687,204

CURVED OFFSHORE WELL CONDUCTORS

Peter W. Marshall, New Orleans, La.; Peter Arnold, Kenner, La., and Francis P. Dunn, New Orleans, La., assignors to Shell Oil Company, New York, N.Y.

Filed Sept. 8, 1970, Ser. No. 70,101
Int. Cl. E21b *7/04*
U.S. Cl. 175—9 **12 Claims**



Apparatus and method for producing hydrocarbons from a subterranean hydrocarbon-bearing formation located beneath the floor of a body of water. A platform structure is installed on the floor over the formation and well conductors are extended down the structure and penetrate into the floor of the body of water. The conductors may include an upper vertical portion, then continually curve downwardly and outwardly through the structure above the floor in a manner maintaining a relatively smooth bore throughout the entire extent of the conductors. The conductors are extended into the floor of the body of water and wells are drilled, via the conductors, down into communication with the formation. Formation fluids are then produced from the formation via the conductors.

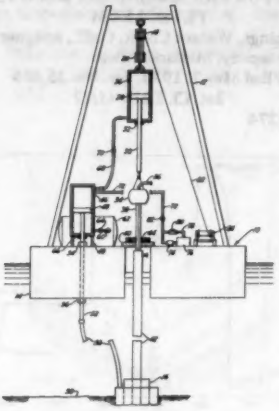
3,687,205

FLOATING RIG MOTION COMPENSATOR

Ernest A. Mori, Hampton Township, Allegheny County, Pa., assignor to Gulf Research & Development Company, Pittsburgh, Pa.

Filed Oct. 28, 1970, Ser. No. 84,579
Int. Cl. E21b *19/08, 7/12*
U.S. Cl. 175—27 **9 Claims**

Apparatus for compensating for the vertical motion of a floating rig caused by wave action to hold a tool at a constant depth in which the tool is suspended from a piston supported in a cylinder by a hydraulic fluid under pressure. The cylinder is hung from the traveling block of the rig whereby the cylinder moves vertically with the rig. A compensating cylinder mounted on the rig has a piston urged upwardly therein by compressed gas and limited in upward movement



by a cable connected to the wellhead. A conduit connecting the two cylinders allows hydraulic fluid to be displaced from one cylinder to the other in response to wave-induced vertical motion of the drilling rig. A valve in the conduit allows slackening of the cable when the load supported by the piston is reduced.

3,687,206

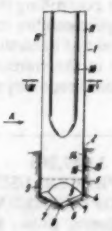
Patent Not Issued For This Number

3,687,207

ROCK DRILL

Willi Harz, Friedrichshafen, Germany, assignor to Hawera Hartmetall-Werkzeugfabrik Gesellschaft mit beschrankter Haftung, Revensburg, Germany

Filed Dec. 15, 1969, Ser. No. 885,146
Claims priority, application Germany, Dec. 19, 1968, G 68 12 098
Int. Cl. E21c *13/06*
U.S. Cl. 175—410 **15 Claims**



A rock drill, especially for rotary blow drilling, with a drill shank which over its entire length has solid cross sections and which at one end is provided with at least one hard metal cutting part inserted into a transverse groove and supported by the drill head, which latter, at least directly behind the cutting edge, has a substantially circular solid cross section.

3,687,208

Patent Not Issued For This Number

3,687,209

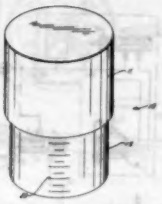
WEIGHING DEVICE

Marvin E. Goldberg, Monsey, N.Y., and George Pollack, Fairlawn, N.J., assignors to Revlon, Inc.

Filed Dec. 16, 1971, Ser. No. 208,738

Int. Cl. G01g *3/02, 19/52, 23/00*

U.S. Cl. 177—233 **1 Claim**



A weighing device for aerosol containers which also functions as a cap for the container.

3,687,210

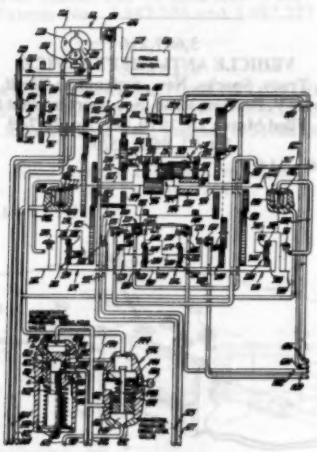
POWER TRAIN CONTROL SYSTEM

Robert H. Schaefer, Westfield, Ind., assignor to General Motors Corporation, Detroit, Mich.

Division of Ser. No. 779,502, Nov. 27, 1968, Pat. No. 3,640,157. This application Aug. 3, 1970, Ser. No. 60,453

Int. Cl. B62d *11/10*

U.S. Cl. 180—6.44 **5 Claims**



A control system is shown for a multispeed forward and reverse track-laying vehicle power train, the control system having a manual forward and reverse control for effecting manual shifts between forward and reverse, a manual drive range control and an automatic drive range shifting operation and a steering control for effecting steering operation. The manual forward and reverse control provides selection between forward and reverse drive in the lowest drive range and prevents such shifting by the operator in all of the higher drive ranges. The manual drive range control provides selection between the drive ranges with the selected drive range being established immediately on an upshift and by speed governed automatic shifting operation on a downshift. The automatic drive range control provides automatic shifting using separate speed controlled upshift biases, an engine torque demand controlled upshift inhibiting bias and an engine torque demand controlled downshift bias. Both the manual forward and reverse control and the manual drive range control are electrically activated and in the event there is an interruption in electrical power, the directional drive selected by the manual forward and reverse control is maintained while the range control, if under manual control is automatically conditioned for automatic control to maintain power train control. A sequence control is effective to disengage the range drive to the load in the lowest drive range during shifting between forward and reverse to provide for engagement of the directional drive under no-load conditions. The steer control operates on a hydrostatic unit to control steering by controlling hydrostatic pump displacement while assuring straight vehicle no-drift motion when there is no steer demand. The controlling force effecting this pump displacement control is varied according to hydrostatic pump output to meet the varying steer load demands in both directions of steer. There is also provided a stroke or pump displacement limiter for limiting pump displacement regardless of the steer demanded by the operator to prevent pump overload. Hydrostatic system pressure is controlled by a pressure relief control in accordance with engine torque demand and vehicle speed to both prevent overloading of the hydrostatic pump and limit the degree of steer bias. The steer control signals the range control to inhibit automatic range shifting during steering operation. The hydrodynamic torque converter in the power train has a lockup drive which is normally disengaged on range shifting and is held engaged during low speed operation in each range to provide for utilization of vehicle momentum to provide power for steering while preventing engine stall.

3,687,211

Patent Not Issued For This Number

3,687,212

AUTOMOTIVE VEHICLE WITH HYDROSTATIC DRIVE

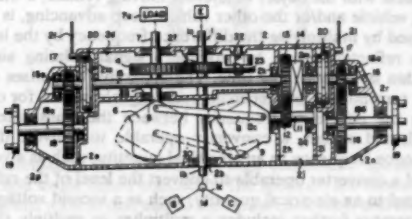
Franz Forster, Aschaffenburg, Germany, assignor to Linde Aktiengesellschaft, Wiesbaden, Germany

Filed Oct. 9, 1970, Ser. No. 79,531

Claims priority, application Germany, Oct. 10, 1969, P 19 51 233.5

Int. Cl. B60k *17/10*

U.S. Cl. 180—66 R **11 Claims**



The axle housing of the drive wheels of an automotive vehicle having a hydrostatic drive is provided with a drive shaft extending into the axle housing from the engine and a pair of lateral output shafts each of which may be provided with a wheel hub. Within the axle housing, there is provided a hydrostatic pump whose axis extends parallel to the drive shaft and which is driven by a gear transmission from the latter. The

hydrostatic pump is hydraulically connected with a hydrostatic motor coupled with an output shaft via a further set of gears, preferably via a differential, the output shaft of the differential being oppositely connected to the wheel hubs by further gearing. The drive shaft is provided with a free end to which power take-off devices may be connected and the drive shaft of the pump likewise may extend from the axle housing to drive auxiliary devices.

3,687,213

SAFETY METHOD AND APPARATUS FOR VEHICLE PASSENGERS

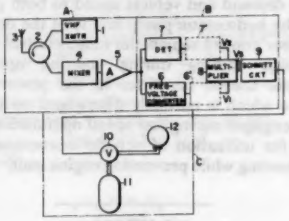
Kazuo Sato, and Tomio Hisatsune, both of Toyota, Japan, assignors to Toyota Jidosha Kogyo Kabushiki Kaisha, Toyota-shi, Japan

Filed Sept. 10, 1970, Ser. No. 70,692

Claims priority, application Japan, Oct. 8, 1969, 44/79993; Oct. 8, 1969, 44/79994

Int. Cl. B60r *21/08*

U.S. Cl. 180—82 **10 Claims**



In a method for protecting passengers in a moving vehicle, radio signals having a predetermined propagation speed and frequency are transmitted from the moving vehicle to an approaching object, such as a second vehicle. Radio signals reflected from the approaching object, and having a different frequency, are received in the moving vehicle. The difference frequency corresponding to the relative speeds between the two vehicles or between the moving vehicle and an object is obtained by utilizing the change in frequency of both signals caused by the Doppler effect, and the level of the reflected signal, corresponding to the distance between the moving vehicle and the approaching object, is concurrently determined. The time remaining before collision of the moving vehicle with the object or another moving vehicle, if the moving vehicle and/or the other vehicle keep advancing, is determined by multiplying the difference frequency by the level of the reflected signal, to produce a signal inflating air bags within such remaining time. The apparatus comprises means for transmitting and receiving radio signals, means for obtaining the difference frequency between the transmitted and reflected signals, a converter operable to convert the difference frequency to an electrical quantity, such as a voltage, and a converter operable to convert the level of the reflected signal to an electrical quantity, such as a second voltage. The apparatus further includes a multiplier to multiply the two electrical quantities to produce actuating signals when the multiplied value exceeds a predetermined value of the remaining time, and includes means for inflating the air bags, responsive to the actuating signals, within the remaining time.

3,687,214

Patent Not Issued For This Number

3,687,215

LOCKING SYSTEM FOR WINDOW LIFTERS ACTUATED BY AN AUXILIARY FORCE

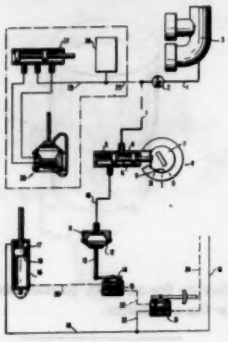
Rudolf Andres, Sindelfingen(Wurtt.), and Hermann Moeller, Aidlingen, Wurttemberg, both of Germany, assignors to Daimler-Benz Aktiengesellschaft, Stuttgart-Unterturkheim, Germany

Filed June 8, 1970, Ser. No. 44,260

Claims priority, application Germany, June 12, 1969, P 19 29 758.6

Int. Cl. B60k *25/04*

U.S. Cl. 180—111 **14 Claims**



A locking mechanism for window lifters actuated by an auxiliary force, particularly in motor vehicles with a load connected to a vacuum source, in which the initiation of the actuation of the window lifter is realized by a control valve that is selectively put into its through-position or closing position by the vacuum, depending on certain measures necessary for driving the vehicle or by the sequence of operation which takes place when stopping the motor vehicle.

3,687,216

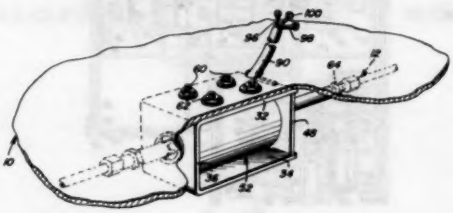
VEHICLE ANTI-THEFT DEVICE

Richard A. Tracy, Sparks, Nev., assignor to Birgit K. Preston and Charles V. Prather, Reno, Nev., part interest to each

Filed March 18, 1970, Ser. No. 20,749

Int. Cl. B60r *25/04*

U.S. Cl. 180—114 **5 Claims**



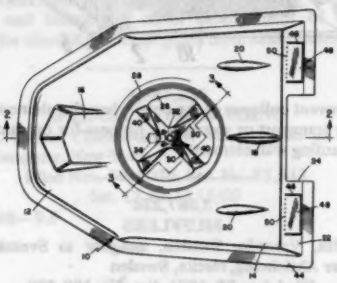
A fuel line mounted normally closed solenoid actuated cut-off valve disposed intermediate the fuel tank and the fuel pump of an associated vehicle engine. The solenoid actuated cut-off valve is electrically connected to the accessory terminal of the associated ignition switch rather than the ignition terminal and therefore, should the ignition system of the vehicle be "hot-wired" by a thief, the solenoid actuated cut-off valve will not be opened and the engine of the vehicle will stall for lack of fuel in a short period of time after being "hot-wired."

3,687,217

GROUND EFFECT VEHICLE

Leonard E. Mueller, San Diego, Calif., assignor to Carl R. Brown, San Diego, Calif., a part interest

Filed Dec. 4, 1969, Ser. No. 881,957
Int. Cl. B60v 1/14
U.S. Cl. 180—120 5 Claims



A ground effect vehicle having a downwardly blowing fan mounted on anti-torque van structure to blow air into a plenum chamber within the vehicle. The plenum chamber increases in width and height toward the rear and has a central rear outlet giving a nozzle effect, the expanding air exhausting through the outlet to provide propulsion. At opposite sides of the outlet are control outlets, which are adjustable collectively and differentially for thrust and directional control. A peripheral horizontal flange around the lower edge of the vehicle guides the outflow of air and adds to stability. In model form the entire frame structure of the vehicle can be made as a unitary thin shell molding.

ERRATA

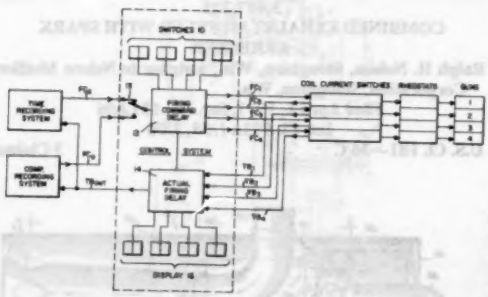
For Classes 180—9 and 180—1 see:
Patents Nos. 3,687,226 and 3,687,227

3,687,218

APPARATUS FOR AND METHOD OF CONTROLLING THE FIRING OF SEISMIC SOUND SOURCES

Sammie F. Ritter, Dallas, Tex., assignor to Mobil Oil Corporation

Filed Sept. 28, 1970, Ser. No. 76,126
Int. Cl. G01v 1/08
U.S. Cl. 181—0.5 FS 6 Claims



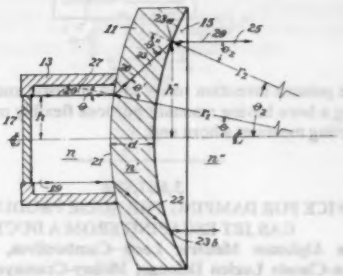
A digital control system for establishing preset delays in firing a plurality of pneumatic sound sources. Predetermined firing command delays between system triggering and source triggering are set by appropriately setting each of a plurality of digital switches associated with the sources. As the elapsed time represented by a count in a command delay register and each of the predetermined delay times set by the switches becomes equal as determined by a coincidence detector, fire commands are generated for each of the sources. After the sources are fired, counts accumulated in firing delay registers associated with the sources are terminated and the counts, which correspond to the delays between triggering and actual firing of the sources, are displayed.

3,687,219

ULTRASONIC BEAM EXPANDER

Gary N. Langlois, Richland, Wash., assignor to Holotron Corporation, Wilmington, Del.

Filed June 9, 1969, Ser. No. 831,402
Int. Cl. G10k 11/00, 11/06
U.S. Cl. 181—0.5 R 8 Claims



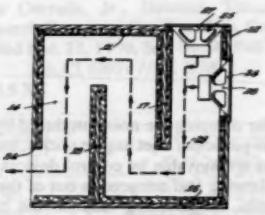
A single compact unit for generating and controlling an ultrasonic beam which includes an ultrasonic crystal generator and a solid ultrasonic lens with a liquid ultrasonic energy coupling therebetween which is contained in a housing joining the crystal and the lens. An antireflection coating on the ultrasonic lens surfaces improves transmission efficiency.

3,687,220

MULTIPLE SPEAKER ENCLOSURE WITH SINGLE TUNING

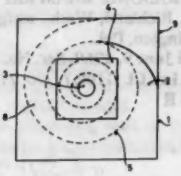
John Virva, Chicago, Ill., assignor to Admiral Corporation, Chicago, Ill.

Filed July 6, 1970, Ser. No. 52,164
Int. Cl. G10k 13/00; H04r 1/28
U.S. Cl. 181—31 B 6 Claims



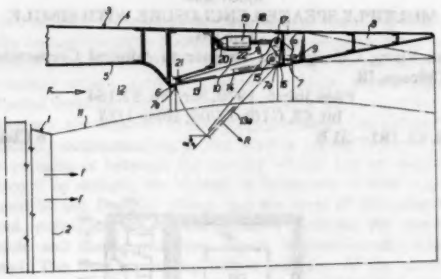
A combination of a plurality of high compliance speakers and a rigid single tuned enclosure. The speakers are mounted on different walls at one end of the tuned enclosure, and all of the speakers have their low frequency response augmented by the loading effect of the enclosure. The tuned enclosure has a folded path which is substantially equal to one-quarter of the wave length of the in-air resonance of the speakers. The enclosure is open-ended and has a cross sectional area which is substantially equal to the cross sectional area of the cone of one of the high compliance speakers. The enclosure walls are lined with a sound absorbing medium. By this arrangement sound may be effectively dispersed without employing a high volume speaker enclosure.

3,687,221
SOUND REPRODUCTION ACOUSTIC ENCLOSURE
Michel Paul Rene Bonnard, 2 ave. du Chateau de Bertin, 78 Chaton, Yvelines, France
Filed March 8, 1971, Ser. No. 121,833
Int. Cl. G10k 13/00; H04r 1/28
U.S. Cl. 181—31 B 5 Claims



The present invention refers to an acoustic enclosure comprising a horn having resonant portions flexibly mounted, and deflecting means at a horn end.

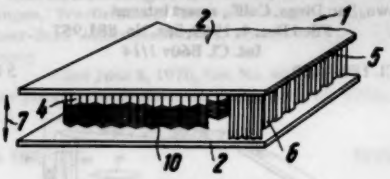
3,687,222
DEVICE FOR DAMPING THE NOISE PRODUCED BY A GAS JET ESCAPING FROM A DUCT
Andre Alphonse Mederic Leon Camboulives, Billancourt; Jean-Claude Lucien Delonge, Moissy-Cramayel; Theophile Francois Le Maout, Cesson, and Roger Alfred Jules Vandenbroucke, Antony, all of France, assignors to Societe Nationale d'Etude et de Construction de Moteurs d'Aviation, Paris, France
Filed May 3, 1971, Ser. No. 139,746
Claims priority, application France, May 11, 1970, 7017065
Int. Cl. B64d 33/06; F01n 1/14, 1/16
U.S. Cl. 181—33 HC 15 Claims



A device for damping the noise produced by a jet escaping from a duct in particular a jet engine nozzle, including silencer elements that are movable by control devices to project into the jet for silencing and retractable out of the jet for normal thrust, wherein, for reducing load on the control devices, means are provided for assisting movement of the silencer elements from their silencing position to their retracted position.

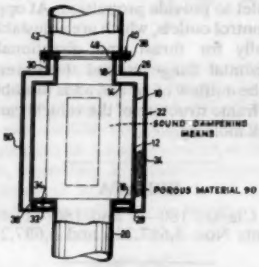
3,687,223
SOUND-RETARDING WALL ELEMENTS
Friedrich Streck, Homburg vor der Hohe, Germany, assignor to Rigips-Stempel GmbH & Co. KG, Dutzenbach, Messenhauser, Strasse
Filed Jan. 12, 1971, Ser. No. 105,859
Int. Cl. E04b 1/86
U.S. Cl. 181—33 G 6 Claims

A sound-retarding wall element having outer sheets and a honeycomb core which is compressed to an irregularly folded shape to improve the sound insulating qualities of the element. Honeycomb spacers formed of easily broken material are inserted between the sheets along opposite side edges of the ele-



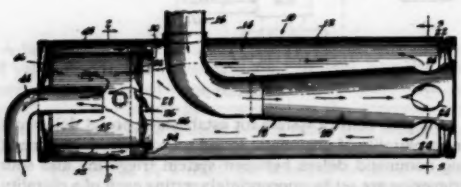
ment to prevent collapse of the cone when the elements are attacked for transport or storage. A process for producing such sound-retarding wall elements.

3,687,224
MUFFLERS
Stig Lundin, Varmdo, Sweden, assignor to Svenska Rotor Maskiner Aktiebolag, Necka, Sweden
Filed Jan. 25, 1971, Ser. No. 109,420
Claims priority, application Great Britain, Feb. 10, 1970, 6,329/70
Int. Cl. G10k 11/02; F01n 7/00
U.S. Cl. 181—33 A 11 Claims



In a duct system including a compressor there is provided at the inlet and/or outlet of the compressor a muffler comprising an inner casing and an outer jacket mutually connected solely by elements of an elastomeric material, the casing being connected to the compressor and the jacket to the duct system whereby to prevent oscillations of the casing walls from passing out into the duct system and casing walls from emitting sound waves into the ambient air.

3,687,225
COMBINED EXHAUST MUFFLER WITH SPARK ARRESTER
Ralph H. Nelson, Stoughton, Wis., assignor to Nelson Muffler Corporation, Stoughton, Wis.
Filed April 6, 1971, Ser. No. 131,656
Int. Cl. F01n 1/08, 3/06
U.S. Cl. 181—36 C 3 Claims



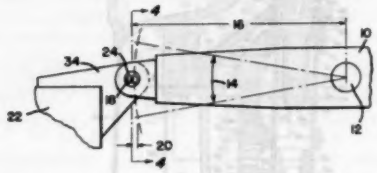
The present invention relates generally to improvements in mufflers for internal combustion engines and the like, and

more particularly to an improved spark arrester device in combination with the chamber of a muffler housing. An embodiment of the invention disclosed herein includes an elongate muffler housing, inlet means associated with the housing for receiving exhaust gases from a source such as an internal combustion engine, stop-down means in the housing for receiving exhaust gases from the inlet means and for directing said gases into a chamber defined by said housing. A unique spark arrester and stop-down means traverses said housing chamber and includes a novel arrangement of restricted openings for directing exhaust gases from said chamber.

3,687,226
SPREAD CENTER BUSHING

Francis P. Coyne, Clarksburg, W. Va., assignor to Ingersoll-Rand Company, New York, N.Y.

Filed Nov. 30, 1970, Ser. No. 93,542
Int. Cl. B62d *55/00*
U.S. Cl. 180—9.5 **3 Claims**

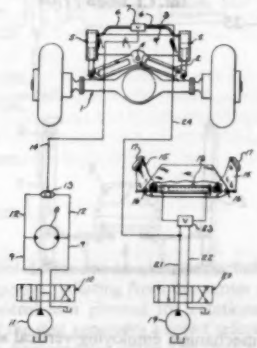


A spread-center bushing with an oscillation type crawler frame for use on track mounted structures. The spread-center bore allows for the shortening of the center distance of a yoke when it pivots about its main pivot point, and the clearance between the outside diameter of the locking pin and the width of the spread-center bore allows for track frame angular movement.

3,687,227
CONTROL CIRCUIT AND LOCK VALVE FOR PIVOT AXLE LOCKOUT CYLINDERS

Gottfried Reuter, and Fortunato S. Ajero, both of South Milwaukee, Wis., assignors to Bucyrus-Erie Company, South Milwaukee, Wis.

Filed Nov. 5, 1970, Ser. No. 87,023
Int. Cl. B60g *19/10*
U.S. Cl. 180—1 R **6 Claims**

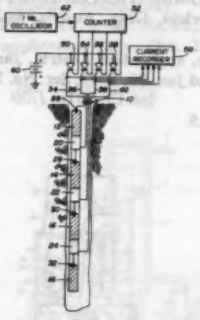


A control circuit for the lockout cylinders of a pivot axle excavator carrier includes a normally closed lock valve that is automatically actuated during propelling to establish open communication between the cylinders to allow pivotal axle movement. The valve includes facing check valves which are unseated by oppositely moving shuttle spools to open a bypass passage, and an actuating line for the valve is connected to a hydraulic propel motor so that the valve is opened automatically upon propelling. In the preferred embodiment, a second actuating line for the valve is connected to a hydraulic outrigger cylinder so that the valve is also actuated automatically while outriggers are being set.

3,687,228
SEISMIC IMPULSE GENERATION TECHNIQUE

Harold B. Morris, 1616 McGowen St., Houston, Tex.

Filed Dec. 14, 1970, Ser. No. 97,611
Int. Cl. G01v *1/08, 1/12*
U.S. Cl. 181—.5 XC **6 Claims**

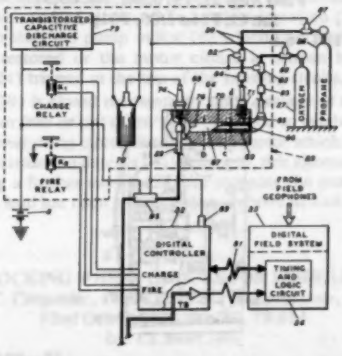


The specification discloses a technique for generating seismic impulses which includes suspending a plurality of discrete explosive charges one above the other. Detonation wires lead to detonation caps attached to each of the explosive charges. Circuitry generates a plurality of firing pulses which are applied to the detonation wires to sequentially explode the charges from top to bottom. All of the charges are detonated within a time interval less than the time required for the blast from the top charge to destroy the detonation wire leading to the bottom charge. The charges are sequentially detonated at time intervals substantially corresponding to the time of travel of an acoustic pulse through the formations between the adjacent charges.

3,687,229
REPETITIVE LOW ENERGY SEISMIC SOURCE SYSTEM CONTROLLED BY DIGITAL TIMING MEANS

Henry Thomas Carruth, Jr., Houston, Tex., assignor to Chevron Research Company, San Francisco, Calif.

Filed Dec. 21, 1970, Ser. No. 99,946
Int. Cl. G01v *1/08, 1/28*
U.S. Cl. 181—0.5 XC **4 Claims**



Initiation, in sequence, of pulses of seismic energy from a selected depth within a shothole using elongated charges of

explosive gas mixtures, is provided by a seismic source system including novel digital data responsive control circuitry controlling the initiation and duration of gas delivery as well as ignition of the gas in accordance with control signals generated using, as a source code, clock pulses and digital signals representative of multi-bit timing words, such as, for example, a nine- or 21-bit digital word.

3,687,230

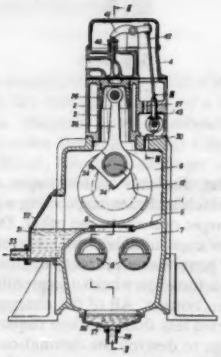
Patent Not Issued For This Number

3,687,231

INTERNAL COMBUSTION ENGINE FOR OIL TESTING

Andreas Scheiterlein, Graz, Austria, assignor to Hans List, Graz, Austria

Claims priority, application Austria, Jan. 7, 1971, A 94/71
Filed Jan. 22, 1971, Ser. No. 108,928
Int. Cl. F01m *1/00*
U.S. Cl. 184—6.5 **8 Claims**



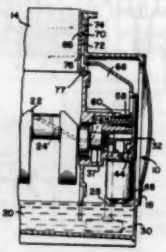
An internal combustion engine for oil testing, comprising two separate lubricating circles, the first of which is supplied with the oil to be tested, and the second with ordinary lubricating oil, each of the lubricating circles being associated with a separate oil chamber in the crankshaft housing, said oil chambers being separated from each other by means of a partition of the crankshaft housing providing an oil-tight seal.

3,687,232

OIL DISTRIBUTION SYSTEM

August M. Stenger, 4102 Meads Creek Road, Painted Post, N.Y.

Filed Aug. 21, 1970, Ser. No. 65,977
Int. Cl. F16n *1/00*; F01p *3/02*
U.S. Cl. 184—6.8 **6 Claims**



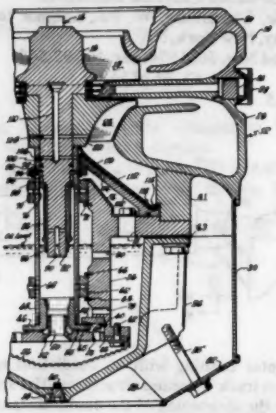
The system incorporates a cylinder which has chambering in the wall thereof and has conduits for conducting that oil, which is in excess of the quantity required for lubrication of the machine of which the cylinder is a part, into the chambers for dispersing incident cylinder heat throughout the cylinder.

3,687,233

INTEGRAL LUBRICATION SYSTEM

Harold A. Greenwald, Los Angeles, Calif., assignor to The Garrett Corporation, Los Angeles, Calif.

Filed July 23, 1970, Ser. No. 57,651
Int. Cl. F16c *1/24*; F16n *7/36*
U.S. Cl. 184—6.18 **15 Claims**



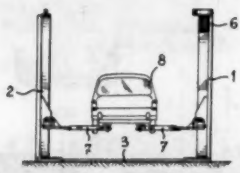
A self-contained lubrication system for a rotary machine includes a sump along with means for filtering and cooling. A shaft of the machine has a hollow and disposed near the sump so that rotation of the shaft, which includes a centrifugal slinger, forms a vortex of lubricant therein so as to deliver lubricant to the shaft bearings through the hollow shaft.

3,687,234

LOAD LIFTING MECHANISM

Jacques C. Gendreau, Myennes-sur-Loire, France, assignor to Fogautolube S.A., Sur-Loire, France

Filed Nov. 18, 1970, Ser. No. 90,758
Claims priority, application France, Dec. 8, 1969, 6942313
Int. Cl. B66b *11/04*
U.S. Cl. 187—25 **5 Claims**



A lifting mechanism employing vertical screws and carrier nut members which move on the screws is disclosed. The lift mechanism is characterized by means for readily checking the degree of wear of the threads of the carrier members, the checking being facilitated by the provision of safety nuts which are linked to the carrier nuts and which will assume the load bearing function upon failure of the carrier nuts.

3,687,235

CONTROL APPARATUS FOR AN ELEVATOR CAR

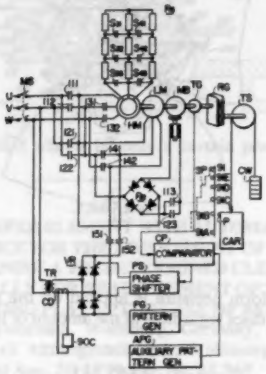
Nobuo Mitsui; Takanobu Hatakeyama, and Katsu Komuro, all of Katsuta, Japan, assignors to Hitachi, Ltd., Tokyo, Japan

Filed Jan. 21, 1971, Ser. No. 108,426

Claims priority, application Japan, Jan. 21, 1970, 45/5060; March 2, 1970, 45/17042

Int. Cl. B66b *1/32*

U.S. Cl. 187—29 R **12 Claims**



A control apparatus for an elevator car having an alternating current motor system comprising a high speed motor mechanically coupled with a low speed motor, wherein the high speed motor is used in accelerating and normal running and the low speed motor is excited by a direct current voltage upon separation of the high speed motor from its alternating current source to effect deceleration.

3,687,236

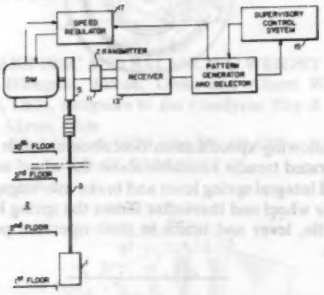
ELEVATOR CONTROL DEVICE

William R. Caputo, Wyckoff, N.J., assignor to Westinghouse Electric Corporation, Pittsburgh, Pa.

Filed June 11, 1971, Ser. No. 152,079

Int. Cl. B66b *1/26*

U.S. Cl. 187—29 R **14 Claims**



A speed control device for an elevator includes a flat disc having a spiral groove radiating from the center embedded in one face. A control arm pivoted for rotational movement about the axis of the disc generates a speed reference signal as a function of the displacement of the arm from a neutral position. An accelerating motor displaces the control arm in a direction opposite to the direction in which the disc is being rotated in synchronism with the movement of the car. A carriage mounted for longitudinal movement along the control arm is coupled to the disc so that it tracks the groove in the disc. When the car is to be slowed down, pawls carried on the carriage are extended so that floor stops inserted in the spiral groove at points corresponding to the positions of the landings will engage the control arm and drive the control arm toward the neutral position thereby reducing the speed reference signal. A three-wire signal generator also mounted on the carriage cooperates with additional stops on the rotating disc to generate notching signals for a floor selector as the car passes predetermined points between the landings. The mass of the components associated with the control arm is concentrated near the center of rotation of the arm to reduce impact forces during pawling.

3,687,237

ELECTROHYDRAULIC HOIST WITH MECHANICAL BACKSTOP

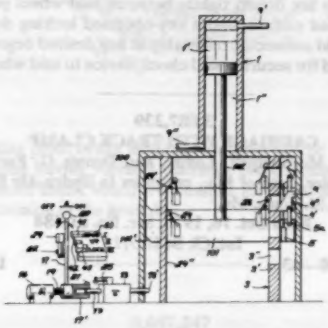
Uberto Capra, Alte Ceccato, Vicenza, Italy

Filed Oct. 20, 1970, Ser. No. 82,385

Claims priority, application Italy, Oct. 21, 1969, 23641 A/69

Int. Cl. B66b *5/16*

U.S. Cl. 187—73 **9 Claims**



A hoisting system, particularly for automotive vehicles, includes a single command lever (17) coupled with a three-position rotary distributing valve (16) and a two-position slide valve (13), the former serving to select one of three modes of operation ("up," "down" or "lock") whereas the latter responds to a shifting of the lever between an "off" and an "on" position. A hydraulic pump (7) works into a high-pressure line with a first branch leading to a hoisting cylinder (1) for elevating the load and with a second branch traversing the two valves in series, this latter branch having an outlet terminating at a set of latching cylinders (5) whose pistons bear upon spring-loaded detents (4) for arresting the load at a selected level of elevation in the "lock" position of the rotary distributor. The connection between the command lever and the slide valve includes a lost-motion coupling (17', 18) whereby in an intermediate shifting position, in which the lever is stopped in the "up" position of the distributor, the slide valve remains closed while an electric switch (25) is actuated to start the pump motor (6) which operates until the lever is restored or the motor circuit is broken by a limit switch (24) tripped at the top of the hoisting stroke. Another switch (29) is closed momentarily upon passage of the rotary distributor into or out of its "lock" position to establish an alternate energizing circuit for the pump motor which raises the load to release the detents (4) if engaged, this alternate circuit including a further switch (28) for stopping the pump motor after the load has risen a short distance above its locking level.

3,687,238

LOCKING WHEEL CHOCKS FOR VEHICLES

Walter C. Carpenter, 14900 E. 40 St., Independence, Mo.

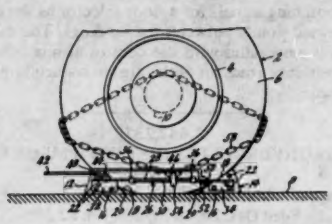
Filed Oct. 8, 1970, Ser. No. 79,014

Int. Cl. B60t *3/00*

U.S. Cl. 188—32 **4 Claims**

Locking wheel chocks for an automotive vehicle wheel consisting of a pair of wedges adapted to be disposed respectively

for and aft of said wheel, in engagement with the ground surface and confronting the periphery of the wheel, a connector joining said wedges and adapted to extend alongside said wheel, a mechanism for shortening said connector whereby



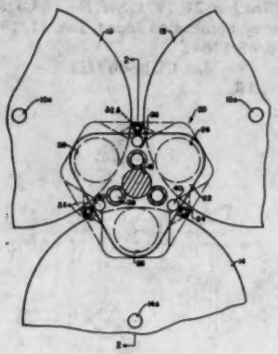
said wedges are driven tightly between said wheel periphery and said road surface, and a key-operated locking device for securing said connector releasably at any desired degree of extension, and for securing said chock device to said wheel.

3,687,239
CARRIAGE WITH TRACK CLAMP
Walter G. Moehlenpah, Ladue, and Dennis G. Farnsworth, Manchester, both of Mo., assignors to Hydro-Air Engineering, Inc., St. Louis, Mo.
Filed Oct. 16, 1970, Ser. No. 81,484
Int. Cl. B61h 7/12
U.S. Cl. 188—43 **14 Claims**

A carriage with rollers for rolling it to different positions of adjustment along a track, and with means carried by the carriage for securely clamping it in adjusted position on the track. In clamping the carriage on the track, the carriage is brought to bear on the track and the rollers are raised clear of the track, and in unclamping the carriage, the rollers are lowered to engage the track and the carriage is raised clear of the track.

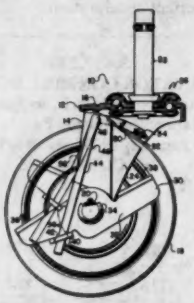
3,687,240
CLOVERLEAF BRAKE STRUCTURE
Carl E. Bricker, Cuyahoga Falls, Ohio, assignor to The Goodyear Tire & Rubber Company, Akron, Ohio
Filed Aug. 25, 1970, Ser. No. 66,811
Int. Cl. F16d 55/224
U.S. Cl. 188—71.1 **3 Claims**

Disclosed is a brake structure for use with a plurality of discs all aligned in a common plane and driven by a common pinion. The brake structure is mounted centrally between the discs and includes a housing on one side of the discs which includes a piston overlying each of the discs. The anvil portion of the brake assembly is located on the opposite side of the discs and is rigidly fastened to the piston housing. The brake assembly is secured to fixed supports by pins extending through the anvil and piston housings. The brake assembly is free to move along the pins in a direction normal to the discs



so that uniform pressure is applied on the piston and anvil sides of the discs regardless of the amount of lining wear.

3,687,241
CASTER BRAKE
Frank J. Fontana, Stratford, Conn., assignor to Stewart-Warner Corporation, Chicago, Ill.
Filed April 15, 1971, Ser. No. 134,191
Int. Cl. B60t 1/04
U.S. Cl. 188—74 **7 Claims**

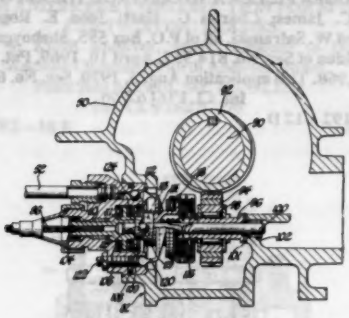


The following specification describes a caster in which a foot-operated treadle rotatable about the wheel axis pivots an L-shaped integral spring lever and brake into engagement with the caster wheel and thereafter tenses the spring lever to hold the treadle, lever and brake in their operated position until released.

3,687,242
ANTI-LOCK BRAKE SYSTEM WITH WHEEL SPEED COMPARATOR
Raymond J. Green, Northville, Mich., assignor to General Motors Corporation, Detroit, Mich.
Filed March 8, 1971, Ser. No. 121,721
Int. Cl. B60t 8/04
U.S. Cl. 188—181 C **3 Claims**

A vehicle anti-lock brake system wherein a suitable prior art device is used to provide anti-lock control for the rear vehicle wheels and a mechanical wheel speed comparator functions to control a brake pressure modulator associated with the front

wheels so that the front wheels are permitted to go slower than



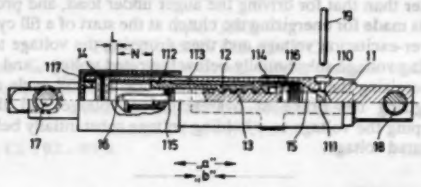
the rear controlled wheels by only a certain predetermined amount.

3,687,243

POWER TRANSFER ELEMENT WITH AUTOMATICALLY ACTING DEVICE FOR THE ADJUSTMENT OF LENGTH FOR MAINTAINING A PREDETERMINED CLEARANCE, ESPECIALLY FOR READJUSTMENT OF THE VENTILATING PLAY IN THE CASE OF BRAKES

Manfred Karl Totschnig, Wolfsburg, Germany, assignor to Volkswagenwerk Aktiengesellschaft, Wolfsburg, Germany

Filed Aug. 20, 1970, Ser. No. 65,365
Claims priority, application Germany, Sept. 3, 1969, P 19 44 586.4
Int. Cl. F16d *65/56*
U.S. Cl. 188—196 D 8 Claims



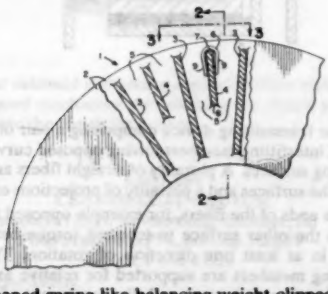
Power transmitting element having an automatically acting device for adjustment of length for stabilization of a predetermined idle path with an adjusting element movable axially in one direction and stopped in the other axial direction by a backstop, for adjustment of play in brakes.

3,687,244

BRAKE DISC AND BALANCING WEIGHT

Kenneth P. Hillegass, Akron, Ohio, and Albert W. Cook, Tallmadge, Ohio, assignors to the Goodyear Tire & Rubber Company, Akron, Ohio

Filed Sept. 4, 1970, Ser. No. 69,637
Int. C¹. F16d *65/12*
U.S. Cl. 188—218 A 2 Claims



A U-shaped spring-like balancing weight clipped on a web of a vaned-type ventilated brake disc and tack welded to the web to permanently hold the weight in position on the disc.

3,687,245

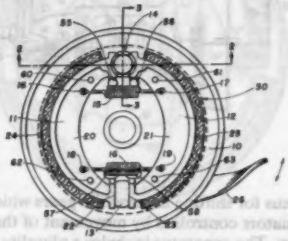
Patent Not Issued For This Number

3,687,246

BRAKE ASSEMBLY

William Vath, Massapequa, N.Y., assignor to Long Island Mold and Tool Corporation, Westbury, N.Y.

Filed Oct. 19, 1970, Ser. No. 81,906
Int. Cl. F16d *51/12*
U.S. Cl. 188—329 8 Claims



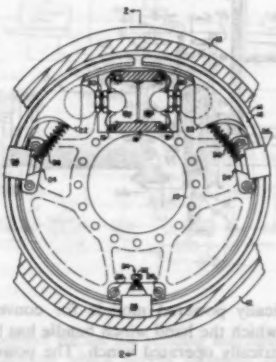
A floating pivot brake assembly suitable for die cast injection molding having variable diameter pivot means mounted on a threaded shank which is accessible for brake adjustments from the outside of the assembly.

3,687,247

FLOATING LINING HIGH TORQUE BRAKE ASSEMBLY

Carl E. Bricker, 2965 McCormick Road, Cuyahoga Falls, Ohio, and Kenneth P. Hillegass, 733 W. Market St., Akron, Ohio

Filed Oct. 16, 1970, Ser. No. 81,193
Int. Cl. F16d *51/06*
U.S. Cl. 188—335 4 Claims

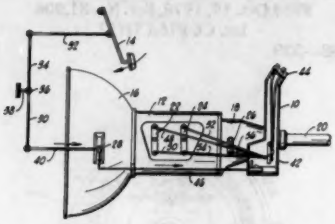


A drum type brake with an internal expanding shoe. The brake lining is positioned between the shoe and the drum but is not bonded or secured as it floats in place. The lining extends nearly the full circle of the drum. Guides are provided to control the position of the shoe with respect to the lining. It is possible with this design to get excellent self-energizing effects without locking.

3,687,248
AUTOMATIC GEAR SHIFTING DEVICE

Elvin G. Holub, 1718 Paris Place, Enid, Okla.

Filed Nov. 12, 1970, Ser. No. 88,955
Int. Cl. F16d 67/00
U.S. Cl. 192—3.54 9 Claims

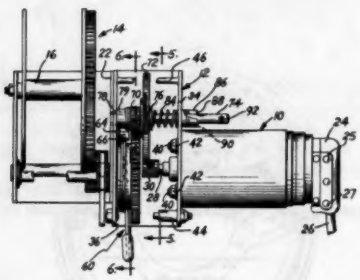


Apparatus for shifting automobile gears which utilizes automatic actuators controlled by movement of the related clutch mechanism. The apparatus includes a plurality of gear shift actuators disposed at or near the driver's position, each of which may be actuated to enable an associated gear lever mechanism such that it will be engaged to move the associated gear shift rod upon operation of the clutch mechanism. In the case of a foot clutch, depression and release of the clutch will cause gear shift actuation as a function of the stroke position of the clutch.

3,687,249
TRANSMISSION AND COIL BRAKE FOR WINCHES

Wayne A. Priest, Kansas City, Kans., and Arthur D. Weigand, Hastings, Nebr., assignors to Dutton-Lainson Company

Filed Dec. 2, 1970, Ser. No. 94,274
Int. Cl. B66d 1/26
U.S. Cl. 192—4 R 6 Claims

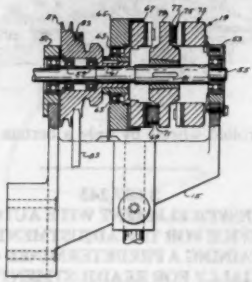


An electrically powered module for converting a hand winch from which the hand winch handle has been removed into an electrically operated winch. The power module includes an electric motor having a drive gear for driving the gears of a gear train. The gear train is housed between parallel, spaced plates, the motor being attached to one plate and the hand winch to the opposite plate. The drive gear and the winch drive shaft both extend to a position intermediate the plates and are connected by the gear train. A coil spring brake is provided as well as means for disengaging transmission by the gear train of the driving force of the motor drive shaft to the winch drive shaft.

3,687,250
AUGER FILLER AND CONTROL THEREFOR

Robert C. James; Charles G. Hart; John E. Rogers, and Richard W. Safranski, all of P.O. Box 595, Sheboygan, Wis.

Division of Ser. No. 814,957, April 10, 1969, Pat. No. 3,616,968. This application Aug. 3, 1970, Ser. No. 67,644
Int. Cl. F16j 67/06
U.S. Cl. 192—12 D 4 Claims

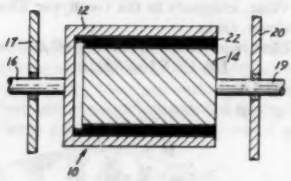


An auger filler for rapid and accurate dispensing of metered quantities of fluent products in which an auger is operated via an electromagnetic clutch and brake unit with reduction gearing between the clutch output and the auger for driving the auger at a lower speed than the clutch output. The unit has a rated voltage and a rated torque, the rated torque being greater than that for driving the auger under load, and provision is made for energizing the clutch at the start of a fill cycle at over-excitation voltage and then dropping the voltage to a holding voltage substantially below the rated voltage, and for deenergizing the clutch at the termination of a fill cycle and energizing the brake at overexcitation voltage and then dropping the voltage to a holding voltage substantially below the rated voltage.

3,687,251
TORQUE TRANSMITTING DEVICE

Alfred J. Hoerner, St. Paul, Minn., assignor to Minnesota Mining and Manufacturing Company, St. Paul, Minn.

Filed Feb. 1, 1971, Ser. No. 111,528
Int. Cl. F16d 11/00, 41/00
U.S. Cl. 192—46 8 Claims



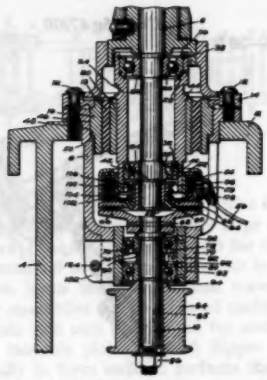
A torque transmitting device comprising a pair of coaxially supported interfitting members having opposed curved torque transmitting surfaces. A plurality of straight fibers are secured to one of the surfaces and a plurality of projections engageable by the free ends of the fibers, for example opposed fibers, extend from the other surface to transmit torque between the members in at least one direction of rotation. The torque transmitting members are supported for relative axial movement to permit engagement and disengagement of the fibers and the projections.

3,687,252

CLUTCH AND BRAKE CONSTRUCTION FOR SPINNING AND TWISTING FRAMES

Maynard J. Krull, Andover, Mass., assignor to Davis and Furber Machine Company, North Andover, Mass.

Filed July 6, 1970, Ser. No. 52,657
Int. Cl. F16d 67/06
U.S. Cl. 192—18 B 4 Claims



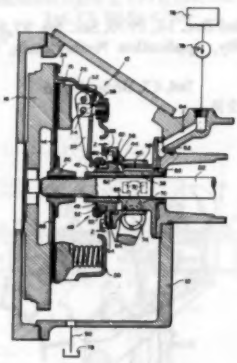
This invention relates to improved bearing mountings for a spindle and its aligned driving shaft and the clutch and electromagnetically operated brake therebetween.

3,687,253

POWER ASSISTED CLUTCH

Elmer G. Bjorklund, Battle Creek, Mich., assignor to Clark Equipment Company

Filed July 22, 1970, Ser. No. 57,257
Int. Cl. F16d 13/72, 25/08
U.S. Cl. 192—91 A 5 Claims



A power released and spring applied friction clutch having fluid powered mechanism for releasing the clutch and directing fluid onto the clutch for cooling.

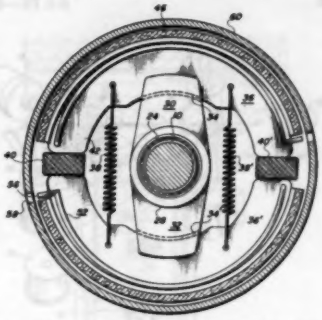
3,687,254

CENTRIFUGAL CLUTCH

Roy H. Bystrom, 6115 N. Ravenswood, Chicago, Ill.

Filed Sept. 16, 1970, Ser. No. 72,679
Int. Cl. F16d 43/24
U.S. Cl. 192—105 A 5 Claims

A slip clutch having a drum secured to the driven shaft is driven by an externally powered carrier. The carrier is supported on bearings and turns freely about the shaft. The carrier supports a pair of drive shoes secured together by springs which tend to prevent the shoes from engaging the drum. Means are provided for adjusting the mass of each drive shoe



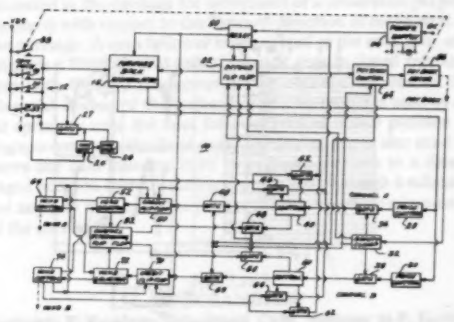
from the exterior of the drum to enable adjustment of the centrifugal force acting upon each shoe as it and the carrier are rotated. By this means, the rotational speed at which clutch engagement occurs, is made selectively adjustable.

3,687,255

MULTI-PRICE, MULTI-CHANNEL COIN CONTROL MEANS

Stanley G. Johnson, II, Kirkwood, Mo., assignor to H. R. Electronics Company, High Ridge, Mo.

Filed April 16, 1970, Ser. No. 29,025
Int. Cl. G07f 1/00
U.S. Cl. 194—1 N 20 Claims



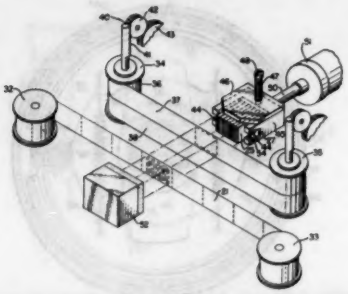
Electronic control means for vending machines and other coin control devices which accept different denomination coins, are capable of making at least two different vends at preselected prices and perform other functions including change making, said control means including adding, subtracting and memory means, and means under the control thereof for producing vending, change making and other functions. The subject means are preferably constructed using solid state components and may also include anti-cheat and/or anti-malfunction devices to prevent the vending of articles unless a proper amount of money has been deposited.

3,687,256

OPTICAL BAR CODE PARALLEL PRINTER

Clarence L. Jones, Kettering, Ohio, assignor to The National Cash Register Company, Dayton, Ohio

Filed April 15, 1970, Ser. No. 28,624
Int. Cl. B41j 1/22
U.S. Cl. 197—1 R 1 Claim



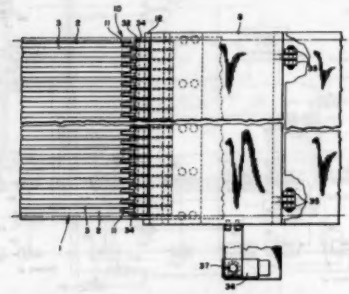
A low-cost printing apparatus for recording data according to a predetermined color bar code on a record medium. The printer apparatus includes a print head composed of a plurality of print elements assembled together, the print elements having opposite or adjacent edge portions each of which contains type elements which print bars in different sequences and in different colors. To complete the printing of a code on a record medium, the print head prints one color with one edge and is then rotated to print a second time, using the other edge, with another color, the recording of the data being completed by the printing with both edges.

3,687,257

THRESHOLD COMB FOR PASSENGER CONVEYOR

Ernest D. Johnson, 486 Narragansett Drive, Tallmadge, Ohio

Continuation-in-part of Ser. No. 20,930, March 19, 1970, abandoned. This application Oct. 26, 1970, Ser. No. 83,964
Int. Cl. B66b 9/12
U.S. Cl. 198—16 12 Claims



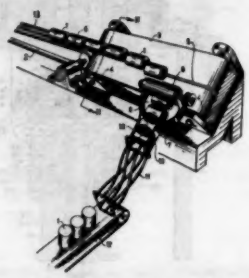
Threshold comb consists of a plurality of comb teeth adapted to extend into the conveyor grooves and movable laterally to provide for self-alignment of the comb teeth in the respective belt grooves. The comb teeth are supported on a slider bar which maintains the comb teeth out of contact with the conveyor to reduce friction and wear, and a constraining rod extends through the forward ends of the comb teeth to transfer the load applied to one tooth to adjacent teeth and to restrict the angularity of the teeth for preventing racking of the teeth on the slider bar. The configuration of the comb teeth also greatly facilitates transfer of objects from the conveyor to an adjacent landing surface.

3,687,258

DEVICE FOR TRANSFORMING THE DIRECTION OF MOVEMENT WITH RESPECT TO THE MAIN LINE OF SYMMETRY OF A ROW OF ADVANCING CYLINDRICAL CONTAINERS

Willem Wolzak, Landsmeer, Netherlands, assignor to Stork - Amsterdam M.V., Amstelveen, Netherlands

Filed Sept. 22, 1970, Ser. No. 74,273
Claims priority, application Netherlands, Sept. 25, 1969, 6914546
Int. Cl. B65g 47/00
U.S. Cl. 198—20 R 5 Claims



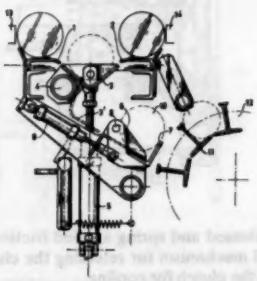
Device for transforming the relative position of each container in an advancing row of cylindrical containers, comprising a horizontal feed path, a sidewardly inclined conveyor, a supporting ledge near said conveyor and means for reducing the horizontal velocity of each container at a position at the lower side of said conveyor.

3,687,259

DEVICE FOR FILLING ADVANCING CARRIERS WITH CONTAINERS

Johannes Bernardus Van Der Winden, Amstelveen, Netherlands, assignor to Stork-Amsterdam N.V., Amstelveen, Netherlands

Filed Dec. 14, 1970, Ser. No. 97,502
Claims priority, application Netherlands, Dec. 17, 1969, 6918903
Int. Cl. B65g 47/26
U.S. Cl. 198—22 R 1 Claim

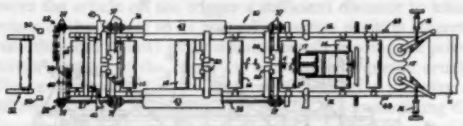


A device for feeding containers such as bottles, jars or tins into continuously advancing carriers of a conveyor for a sterilizer, said device comprising an intermediate transfer member, the containers being advanced in a row upon two or more parallel supply paths, thereafter pushed in transverse direction upon said transfer member which moves between a container-receiving position and a container-delivering position, said containers finally being transferred to a carrier.

3,687,260
EDGING PICKER

James D. Willows, Lewiston, Idaho, assignor to Potlatch Forests, Inc., San Francisco, Calif.

Filed Jan. 20, 1971, Ser. No. 108,011
Int. Cl. B27b 5/28; B65g 13/02, 47/74
U.S. Cl. 198—24 10 Claims

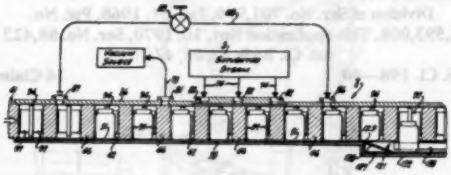


An edging picker for use in conjunction with a double arbor edger or any machine that saws relatively large cants into a plurality of boards. The boards are fed into the apparatus on edge, being maintained as a group. A bumper in the path of the sawn boards limits their longitudinal travel. Laterally shiftable flipper assemblies can be adjusted under the boards so as to segregate side cuts as required for each individual operation. The movable picket of each flipper assembly is shiftable vertically to form inclined surfaces that guide the side cuts to opposite sides of the conveyor apparatus. Vertical guides maintain the center boards in an upright condition until the bumper is lowered and the boards continue along their desired longitudinal path.

3,687,261
CONVEYING SYSTEM

Gerhart A. Guckel, Los Altos, Calif., assignor to James Dole Corporation, San Francisco, Calif.

Division of Ser. No. 741,393, July 1, 1968, Pat. No. 3,606,997.
This application April 2, 1971, Ser. No. 130,725
Int. Cl. B65g 47/04
U.S. Cl. 198—25 2 Claims

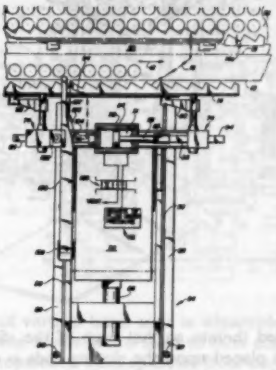


A horizontally positioned rotor in an aseptic canning system, particularly adapted for glass jar containers, is rotatable about an upright axis in an enclosed container sterilizer housing having an entrance and an exit for the containers. A plurality of peripheral pockets open toward the periphery of the rotor continuously convey the containers. Vacuum is applied to the pockets beyond the entrance to withdraw air, and saturated steam under superatmospheric pressure is applied between the vacuum and the exit to sterilize the containers. Pressure is relieved by a bleed connection between the steam application and the exit, which leads to a location adjacent but ahead of the entrance to thus provide a pressure seal against entrance of outside air into the sterile portion of such container sterilizer.

3,687,262
ARTICLE HANDLING APPARATUS

Lyman L. Campbell, 26 E. Circle Drive, East Longmeadow, Mass., and Constantine W. Kulig, 51 Mayflower Road, Windsor, Conn.

Continuation of Ser. No. 31,297, April 23, 1970, abandoned.
This application May 24, 1971, Ser. No. 146,420
Int. Cl. B65g 47/26, 47/00
U.S. Cl. 198—31 AA 20 Claims



Newly formed articles of glassware are continuously fed single file and in longitudinally spaced relationship on a conveyor, and groups of them are pushed diagonally toward one edge of the conveyor, and thence laterally across a deadplate onto a wider lehr conveyor, by a horizontally extending pusher bar which is pendulously mounted on a pair of depending parallel arms. The arms are pivotally mounted on a reciprocable carriage, and as so supported the pusher bar swings through an arc during forward movement of the carriage. In spite of being pendulously supported on these arms the pusher bar is restrained to movement in a horizontal plane during forward movement of the carriage by providing a non-linear carriage track, so shaped as to raise and lower the pivotally mounted arms as the pusher bar swings through its arc. Each arm has a spur gear which meshes with a rack gear slidably mounted in the carriage for movement of a cross-slide perpendicularly with respect to the forward direction of movement of the carriage. A cam follower is connected to the rack gear and engages a fixed cam to move the rack gear in timed relationship with forward movement of the carriage to achieve the diagonal motion of the pusher bar. An air motor is used as an air spring to urge the cam follower into an active position in engagement with the fixed cam, and said motor is also sued to move the cam follower from its engaged position to a disengaged position thereby sliding the rack gear through a substantial angle so as to raise the pusher bar during return movement of the carriage.

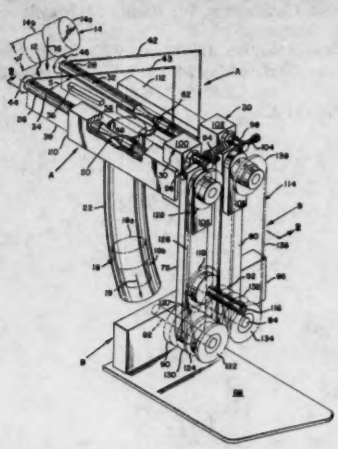
3,687,263
UNSCRAMBLER

Benjamin F. Randrup, Sebastopol, Calif., assignor to F. Korbel and Brothers, Inc.

Filed Jan. 14, 1971, Ser. No. 106,439
Int. Cl. B65g 47/24
U.S. Cl. 198—33 AA 7 Claims

A sorting device or unscrambler comprising a pair of elongate parallel rod members positioned and held at a slope downward from the input station thereof to a delivery station. The spacing of the rods is such that work objects, for example corks or the like which are characterized by a head portion of slightly greater weight and diameter than the remainder thereof, are received at the input station end of the rods and advanced therealong head first to the delivery station. At the latter station, by virtue of a widened out portion formed

between the rods, the work objects are dropped one-by-one in desired predetermined orientation for subsequent processing. At least one of the rods is rotated by a source of rotational



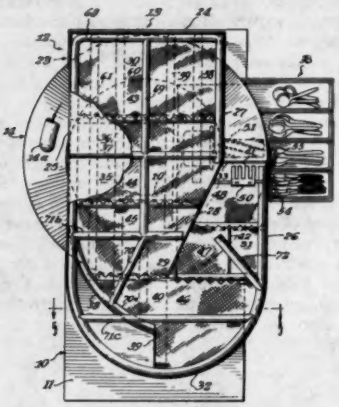
power coupled thereto so that each of the aforementioned work objects placed upon the sloping rods is caused to advance therealong by the coaction of rod movement and attendant slippage thereupon by the work object.

3,687,264

SILVERWARE WASHING AND HANDLING APPARATUS

Aldrich L. Jackson, Eustis, Fla., assignor to Dynasort Corporation

Filed Jan. 20, 1971, Ser. No. 107,902
Int. Cl. B65g *47/24*
U.S. Cl. 198—33 AA **7 Claims**



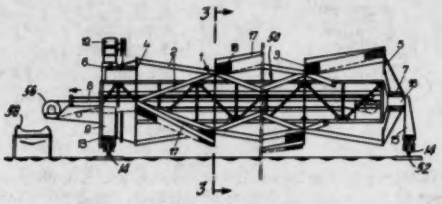
Silverware washing and handling apparatus including a compartment for receiving large quantities of disoriented, mixed silverware which is moved by vibrating means gradually through the compartment in which a system of guide walls acts to orient each piece lengthwise before it passes through a relatively narrow discharge opening where the pieces are dispersed longitudinally so as to be fed to a continuous sorter and end-for-end orienter in a manageable stream. The compartment may be used just to feed clean silverware, or may be fitted with plumbing to wash the silverware. The compartment provides a very compact unit of large capacity by carrying the silverware through an arc of 180° from the compartment's receiving end portion to a discharge opening which is alongside said portion.

3,687,265

MACHINE FOR LEVELING A MIXED BED DUMP

Heinrich Heitzer, Neuss-Weckh, Germany, assignor to Demag-Lauchhammer Maschinenbau Und Stahlbau GmbH, Dusseldorf-Benrath, Germany

Filed Dec. 24, 1970, Ser. No. 101,270
Claims priority, application Germany, Jan. 2, 1970, P 20 00 103.0
Int. Cl. B65g *65/28*
U.S. Cl. 198—36 **9 Claims**



A machine for leveling a mixed bed dump includes a transversely extending bridge frame which travels relatively to the dump to be leveled and which includes transversely extending chord girders providing mounts for ring posts at each end at a plurality of transverse locations. The ring posts extend radially outwardly and carry cutting blades or knife edges. Between the knife edges and the chord girders are arranged a mat formed of chains or similar members which arch downwardly during the upward cutting of the knives and receive the material of the dump and subsequently transfer the material into a conveyor running through the central frame work as the ring members are rotated. The apparatus also includes a grate which is mounted on a side and is adapted to engage over the surface of the dump to provide a raking action for any caking material which may be handled.

3,687,266

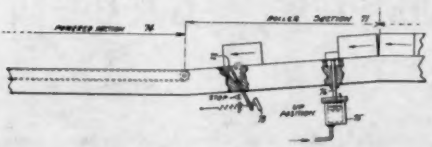
Patent Not Issued For This Number

3,687,267

CONVEYOR LOADING AND COUNTING SYSTEM

David A. De Witt, 9 Wempel Building, Netherlands Village, Schenectady, N.Y., and Ralph W. De Witt, 68 Spring Ave., Latham, N.Y.

Division of Ser. No. 701,979, Jan. 31, 1968, Pat. No. 3,593,008. This application Nov. 10, 1970, Ser. No. 88,422
Int. Cl. B65g *43/08, 47/10*
U.S. Cl. 198—40 **16 Claims**



A conveyor loading and counting system is described for deriving a count and controlling operation of a conveyor for transporting articles between a loading and unloading area. The system includes loading and unloading area count registering means coupled to and controlling loading and unloading area counting and read-out means, respectively. The loading area count registering means includes a loading area count registering trigger mounted on a conveyor mechanism for moving completed articles from the loading area to an unloading area with the trigger means being actuated by a completed article passing over the conveyor mechanism for

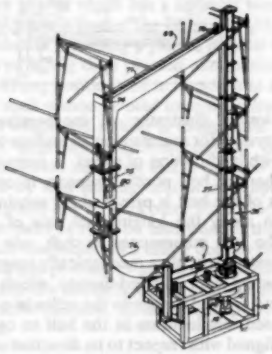
registering one unit count for each completed article transported by the conveyor mechanism out of the loading area into the unloading area. The conveyor mechanism includes a power driven portion that normally in its inactive condition engages a completed article subsequent to the completed article being loaded upon the conveyor mechanism and wherein the count registering trigger of the loading area counter, in addition to registering a unit count for each completed article loaded upon the conveyor mechanism, also actuates the power driven portion of the conveyor to cause the conveyor to move the article off the trigger a sufficient distance to assure return of the trigger to its normally inactive position (thereby recording one count) while simultaneously loading the power driven portion of the conveyor with one completed article. The conveyor mechanism preferably includes a plurality of different located count assuring stops for accommodating different types of articles produced by the manufacturing facility and being loaded on the conveyor. The system also further includes a plurality of different characteristic article counters at both the loading areas for deriving a count of each different type of article completed in the manufacturing facility and a type of article selector for selectively activating a desired one of the differently located count assuring stops and different characteristic article counters. The system also further includes at least one over-delivery sensing and inactivating control means for sensing a build up of unloaded articles being delivered to the discharge-unloading end of the conveyor mechanism above a predetermined number, and for inactivating the power driven portion of the conveyor mechanism in response thereto. Further, manually operable control means also are provided for inactivating the power driven portion of the conveyor at the option of an operator-unloader working at the discharge-unloading end of the conveyor.

3,687,268

CONVEYOR FOR BUILDING MATERIALS

Donald W. Brown, 20 Oswald St., Pawtucket, R.I.

Continuation-in-part of Ser. No. 808,456, March 19, 1969, abandoned. This application Aug. 20, 1970, Ser. No. 65,432
Int. Cl. B65g *37/00*
U.S. Cl. 198—85 **12 Claims**



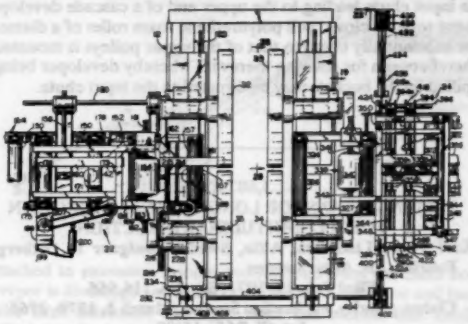
An apparatus for attaching to building scaffolding for conveying, usually vertically, building materials from the ground to various levels. The apparatus is sectional for increasing its height as the height of the building increases. Work carriers are transported upwardly and automatically discharged from their lifting means to a return loop which communicates with drive means to transport the carriers back to the bottom of the apparatus where they are automatically placed ready to travel upwardly with an additional work load.

3,687,269

APPARATUS FOR EDGING AND RESAWING LUMBER

Rene Fritz, and Rene Eugene Fritz, both of Albany, Oreg., assignors to Albany Machine & Supply Inc., Albany, Oreg.

Filed Dec. 15, 1969, Ser. No. 885,389
Int. Cl. B27b *15/08*; B65g *13/02*
U.S. Cl. 198—127 **22 Claims**



A battery of vertical band saws is adjustable to vary the spacing between bands and is used to both edge and resaw material. A preparation table upstream from the saws receives material from a recirculating conveyor or from a head rig, orients the material in the most desirable position for cutting and transfers the material endwise to an infeed table. The infeed table has toothed conveyor rolls for feeding the material positively into the saws, an overhead pneumatic roll for engaging the top of the material while edging and driven side press rolls for pressing the material against a line bar when resawing.

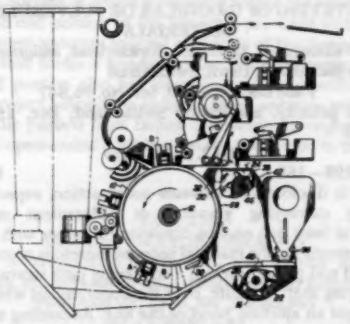
Downstream from the saws an edge picker table has a pair of longitudinal separating plates normally aligned with the two outside saws for separating edge trimmings from the material to be processed into lumber. The plates are withdrawn from alignment with the saws when resawing. A sweep table receives material from the edge picker table and includes sweep fingers which sweep across the table for transferring material sideways to the recirculating conveyor and pivot downwardly to permit transfer of material endwise from such table.

3,687,270

CONVEYOR ASSEMBLY

James E. Britt, Penfield, and Robert E. Hewitt, Ontario, both of N.Y., assignors to Xerox Corporation, Stamford, Conn.

Filed Jan. 6, 1971, Ser. No. 104,341
Int. Cl. B65g *17/12, 47/18*
U.S. Cl. 198—140 **3 Claims**



A conveyor assembly for xerographic reproducing machines. The conveyor assembly includes a plurality of elon-

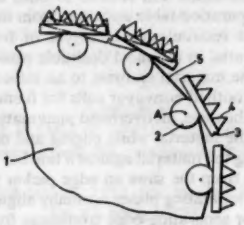
gated buckets mounted at their opposite ends to endless belts. The belts are each mounted on upper and lower pulleys mounted on shafts. The lowermost shaft is an idler while the uppermost shaft is power driven to move the buckets in a continuous path of movement from a developer sump portion whereat two-component developer is picked up by the buckets to above the upper pulleys. There the buckets are inverted by their movement to dump the conveyed developer to an input chute leading to the upper end of a cascade development zone. A closed cell polyurethane foam roller of a diameter substantially equal to that of the upper pulleys is mounted therebetween for rotation therewith whereby developer being spilled by the buckets may be directed to the input chute.

3,687,271

FEEDING MEANS FOR LONGITUDINAL OBJECTS IN THEIR LONGITUDINAL DIRECTION

Karl Thore Lindblom, Alfta, Sweden, assignor to Ostbergs Fabriks, AB, Alfta, Sweden

Filed Feb. 19, 1971, Ser. No. 116,965
Claims priority, application Sweden, March 3, 1970, 2765
Int. Cl. B65g *15/00*
U.S. Cl. 198—167 **7 Claims**



Timber in many cases is fed in its longitudinal direction by contact with jags on a driven roll. In certain cases the roll can be built up of plates carrying the jags and extending in the longitudinal direction of the roll. According to the invention, these plates can be rockingly mounted about axles in parallel with the roll axle, so that always two adjacent plates can adjust themselves to be on the same plane, thereby doubling the drive force compared with the conventional arrangement with stationary plates and reducing the tendency of sliding.

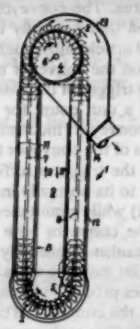
3,687,272

ELEVATOR, ESPECIALLY FOR THE VERTICAL CONVEYING OF GRANULAR OR PULVERULENT MATERIALS

Edwin B. Eisenegger, St. Gallen, Switzerland, assignor to Gebruder Buhler AG, Uzwil, Switzerland

Filed Dec. 10, 1970, Ser. No. 96,847
Claims priority, application Switzerland, Dec. 15, 1969, 18602/69
Int. Cl. B65g *19/14*
U.S. Cl. 198—168 **8 Claims**

There is disclosed an elevator construction, especially for vertically conveying granular or pulverulent materials, wherein at least one endless conveying member with entrainment elements for the material secured thereto is continuously conveyed and passes through a conveying path surrounded by a conveying shaft or chute, over the upper end of which there is arranged an ejection hood or the like. According to the invention, the entrainment elements are constructed to possess a substantially funnel-shaped configuration, are open at both the top and bottom, and wherein the cross-section of each entrainment element, viewed in the direction of material conveying, widens at all sides. Further, the width of the ejection hood



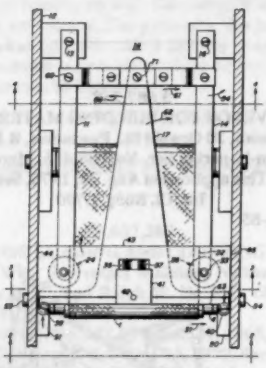
measured transverse to the direction or path of movement of the conveying member is greater than the width of the conveying shaft or chute.

3,687,273

TRANSPORT BELT ALIGNMENT SYSTEM

Frederick W. Macone, Carlisle, and Normand Lafortune, Dracut, both of Mass., assignors to Avant Incorporated, Concord, Mass.

Filed Nov. 5, 1970, Ser. No. 87,277
Int. Cl. B65g *15/62*
U.S. Cl. 198—202 **19 Claims**



This disclosure illustrates an inexpensive and reliable mechanical system for maintaining an endless transport belt in alignment with its direction of travel. A pair of sensing levers having mechanical belt position sensors in contact with opposite edges of the belt is provided for sensing a shift in the belt position along the longitudinal axis of a belt support roller. As the belt commences to shift, one of the sensing levers is actuated to apply a mechanically magnified torque to a roller adjusting lever coupled thereto, which torque is again magnified and applied in turn to the roller in a direction to induce increased tensile stress in the belt to cause the belt to become realigned with respect to its direction of motion.

3,687,274

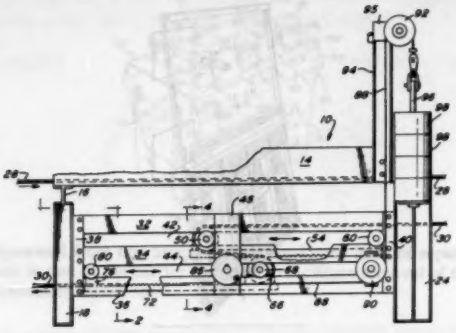
BELT TAKE-UP APPARATUS

Willard Clark, Farmland, and Charles Campbell, Muncie, both of Ind., assignors to Maul Bros., Inc., Millville, N.J.

Filed Feb. 2, 1971, Ser. No. 111,969
Int. Cl. B65g *15/30*
U.S. Cl. 198—208 **10 Claims**

The belt take-up apparatus has an upper roller and rack unit reciprocable horizontally and a lower roller and rack unit

reciprocable horizontally. A shaft has a pinion meshed with the rack units. Means are provided to rotate the shaft to move



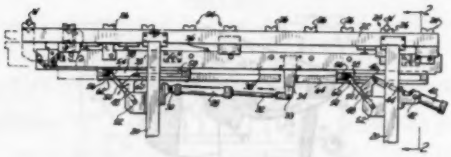
the rollers and their respective rack units toward and away from a vertical plane containing the shaft to adjust belt tension.

3,687,275

AUTOMATIC ACCUMULATING WORK PIECE LIFT AND CARRY TRANSFER MECHANISM

Richard Broser, Royal Oak, Mich., assignor to Accum-Matic Systems, Inc., Livonia, Mich.

Filed Nov. 23, 1970, Ser. No. 91,837
Int. Cl. B65g 25/04
U.S. Cl. 198—219 12 Claims



A mechanical automatic accumulating transfer machine for conveying work pieces which has a series of work piece supporting stations upon a frame, the latter movably mounting a lift and carry shuttle mounting a pair of parallel opposed longitudinal rows of lifting dogs pivoted automatically to an inoperative non-lifting position and in response to a mechanical sensing arm at each station pivoted to an operative work piece lifting position when said station is empty, and wherein opposed pairs of dogs are interconnected for movement in unison. Cam rollers on said dogs and in one row respond to a cam controlled by said sensing arm at an empty station to mechanically tip said dog to work piece lift position. Trip arms are arranged in pairs of rows on said shuttle, the arms being end to end, each connected to a lifting dog, so that when one dog is automatically pivoted to inoperative position, all dogs forwardly thereof are similarly tipped, and when one dog is tipped to operative position, all dogs rearwardly thereof are similarly tipped.

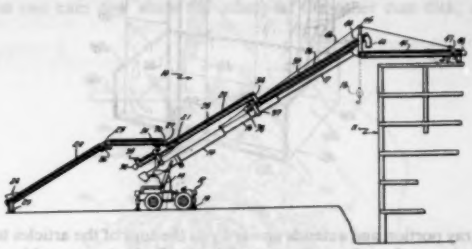
3,687,276

SELF-PROPELLED CONVEYOR APPARATUS

Robert A. Pelletier, Winter Park, Fla., assignor to Mechtron International Corporation, Orlando, Fla.

Continuation of Ser. No. 752,365, Aug. 13, 1968, abandoned.
This application Jan. 4, 1971, Ser. No. 103,810
Int. Cl. B65g 41/00, 37/00
U.S. Cl. 198—233 7 Claims

A self-propelled conveyor apparatus in which a multiple system is mounted to a self-propelled crane having an extendable boom whereby extending, raising, lowering or rotation of the boom can be utilized to position the conveyor distribution and also to react the system for portage. A feeder conveyor is connected to a main conveyor and adapted to convey material from a loading hopper onto the main conveyor attached to the main boom. Extension conveyors are attached to extension booms and material from the main conveyor is discharged onto the first extension conveyor and from the first extension conveyor onto the second and finally discharged at the work area. The invention can convey concrete or the like over substantial distances and substantial heights such as multi-story buildings.

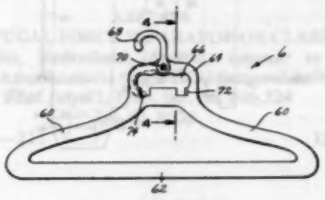


3,687,277

GARMENT PACKAGE

William L. Spencer, Ladue, Mo., and Richard D. Juenger, Belleville, Ill., assignors to Curlee Clothing Company, St. Louis, Mo.

Filed July 13, 1970, Ser. No. 54,205
Int. Cl. B65d 85/18
U.S. Cl. 206—7 10 Claims



A garment package includes a box having overlapping top walls which are notched to form a slit in the top of the box. The slit receives the upper end portion of a hanger, the clothes hanging portion of which is disposed within the interior of the box. The end portion of the hanger is provided with an elongated finger aperture located exteriorly of the box so that the end portion forms a handle for the entire garment package. The end portion also has laterally projecting protuberances which project beyond the margins of the aperture and prevent the handle portion from falling completely through the aperture. An open-ended hook is pivotally connected to the handle portion.

3,687,278

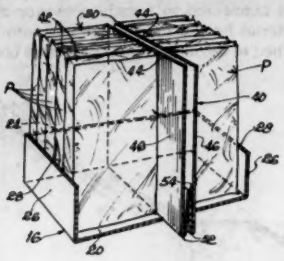
DISPLAY CARTON ASSEMBLY

Stephen S. Graham, Chicago, Ill., and Martin Baumann, Glencoe, Ill., assignor to said Graham, by said Baumann

Filed Aug. 21, 1970, Ser. No. 65,989
Int. Cl. B65d 5/48
U.S. Cl. 206—44 R 7 Claims

A shipping and display carton assembly. The carton is opened to provide an open-topped display tray portion con-

taining a pair of rows of upstanding articles. A resilient divider biases the rows of articles outwardly against the sides of the

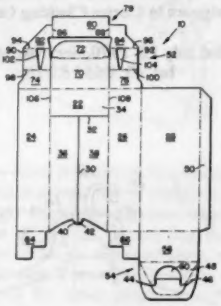


tray portion and extends upwardly to the tops of the articles to enhance the column strength of the display carton assembly.

3,687,279
END STRUCTURE FOR SHADOW BOX DISPLAY CARTON

Orison W. Stone, Carlann Lane, Valley Cottage, N.Y.

Filed Oct. 27, 1970, Ser. No. 84,425
Int. Cl. B65d *5/50*
U.S. Cl. 206—45.14 **29 Claims**



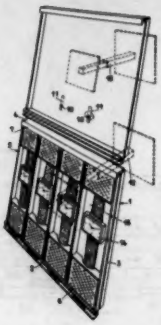
An improved upper end construction for a shadow box display carton, comprising a sliding sling structure hingedly interconnected between a pair of upper end dust flaps and including a sling panel positioned in a plane parallel to the longitudinal axis of the carton. The sliding sling structure also includes a pair of article-supporting, wedge panels hingedly connected between the sling panel and the dust flaps, and angularly positioned in the upper end of the carton. The sling panel cooperates with ledges or slots in the wedge panels to support one end of the article received in the carton.

3,687,280
STAND FOR SHOWCASE DISPLAY OF GOODS IN BOXES OR PACKAGES

Marcel Fortannaz, Echandens (Vaud), Switzerland

Filed Jan. 20, 1970, Ser. No. 4,264
Claims priority, application Switzerland, Jan. 28, 1969, 1235/69
Int. Cl. B65d *5/50*
U.S. Cl. 206—45.15 **6 Claims**

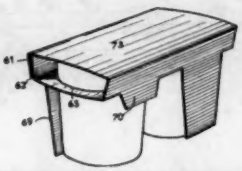
A stand for the display of goods contained in boxes or packages, characterized by having a flat rectangular base with four lateral walls two of which face each other and have a lip parallel to the plane of the said base. These lips, one being wider than the other, point toward each other and leave a rectangular gap between them. A false bottom is adapted for sliding movement on the base to abut against the aforementioned wide-lipped wall or to move away from it while being kept under the corresponding lip. Stops are provided for restraining the said sliding movement.



3,687,281
PACKAGING DEVICE FOR DISPLAYING AND TRANSPORTING CONTAINERS

Marcel Prot, La Fontaine Richard Par, France, assignor to Mead-Emballage, Chateauroux, France

Filed July 17, 1970, Ser. No. 55,633
Claims priority, application France, July 31, 1969, 6926250
Int. Cl. B65d *71/00*
U.S. Cl. 206—65 R **2 Claims**



A carton blank is provided having a series of longitudinally adjacent panels connected to one another by score lines. One of the panels includes cut out portions for supporting articles such as yogurt containers therein. One of the other panels forms a protective panel which when in position is disposed above the panel with the cut outs. Flaps are formed by the portions cut out to cover the lateral surfaces of the articles to be displayed and supported therein. An additional group of articles can be superposed on the articles supported in the panel having the cut outs. An additional panel may be provided between the protective panel and the panel with the cut outs with portions for maintaining the additional group of articles in position. The assembled carton blank provides a displaying, holding and carrying device particularly useful for yogurt containers.

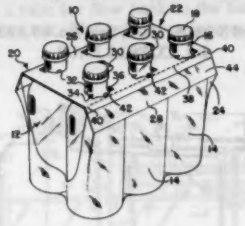
3,687,282
CONTAINER PACKAGE

Ronald C. Owen, Chicago, Ill., assignor to Illinois Tools Works Inc., Chicago, Ill.

Filed May 5, 1970, Ser. No. 34,784
Int. Cl. B65d *65/16, 85/62*
U.S. Cl. 206—65 S **1 Claim**

A container package for a plurality of containers which includes first and second carrier elements which are interconnected to one another to form a closed loop carrier member

which embraces and secures the containers together as a unit, the first and second carrier elements capable of being



separated from one another along weakened lines of separation in one of the carrier elements to facilitate removal of the containers therefrom.

3,687,283

Patent Not Issued For This Number

3,687,284

RECONDITIONING OF SUSPENSIONS USED IN THE SEPARATION OF MINERALS

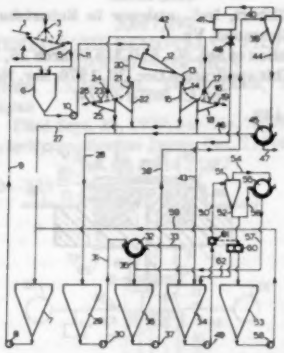
Jan N. J. Leeman, Heerlen, and Hubert H. Dreissen, Geleen, both of Netherlands, assignors to Stamicarbon N.V., Heerlen, Netherlands

Filed Oct. 27, 1970, Ser. No. 84,367

Claims priority, application Great Britain, Nov. 19, 1969, 56,714/69

Int. Cl. B03c *1/30*

U.S. Cl. 209—39 **6 Claims**



A method for reconditioning a diluted suspension of fine magnetizable particles for reuse in a specific gravity separation process wherein the diluted suspension is first separated from any particulate impurities, then diluted and fed to a cyclone densifier wherein the coarser magnetizable particles of the suspension are concentrated and the fine particles are separated and fed to a magnetic separator, the fine particles are then combined with the suspension of concentrated relatively coarser particles.

3,687,285

POSITIVE TWO CHANNEL CAN DISCHARGE

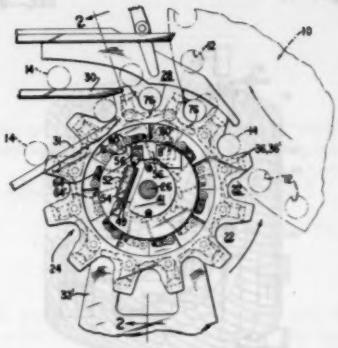
Clifford H. Messervey, 55 Williams St., East Randolph, N.Y.

Filed Dec. 23, 1970, Ser. No. 100,891

Int. Cl. B07c *3/02*

U.S. Cl. 209—74 R **20 Claims**

Apparatus for sorting leaky from leak-proof cans which includes a hub mounted on a shaft for rotation; a pair of spaced starwheels, presenting a plurality of pockets for receiving cans from can testing apparatus, rigidly secured on each side of the hub and being rotatable therewith; a pair of stationary cam disks mounted on outside of each of the starwheels, each cam disk having an undercut; cam gear rotatably secured to the hub at each position between the pockets in alternating sequence; a cam roller secured to each of the cam gears by means of a bar, alternate cam rollers being arranged to travel on one cam disk while the others on the other cam disk; a



separate spring secured to the starwheels and to the bars to bias cam rollers against the cam track; a cam segment pivotally secured to each cam disk and being disposed in a recess adjacent the undercut; a piston affixed to the cam segment for elevating it above the cam disk; and a clamp-reject device disposed below each of the pockets between starwheels which ejects leaky cans at one point when cam roller travels over extended cam segment or ejects by gravity leak-proof cans at another point.

3,687,286

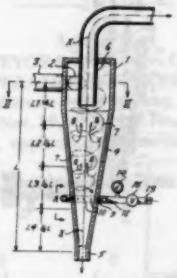
CENTRIFUGAL FORCE SEPARATOR OR CLASSIFIER

Viktor Weiss, Radenthein, Austria, assignor to Oesterreichisch-Amerikanische Magnesit Aktiengesellshaft

Filed July 31, 1969, Ser. No. 846,324

Int. Cl. B03d

U.S. Cl. 209—211 **12 Claims**



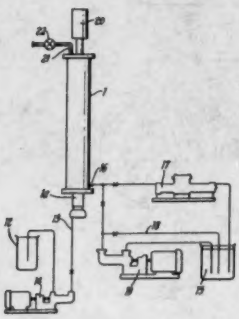
A method and apparatus for simultaneously separating the solid from the liquid phase and coarse solids from finer solids in a suspension by feeding the suspension tangentially to the top of a centrifugal separator and water under pressure radially inwardly to a lower portion by the separator whereby the combined action of the centrifugal force generated and the turbulence thresholds created by the entry of the water causes the finer solid particles to move upwardly along the axis of rotation to a discharge outlet and the coarse particles to move downwardly along the wall of the separator to a discharge outlet at the lower end thereof.

3,687,287

TUBE PRESSURE FILTERS

Ralph Derek Gwilliam, Cornwall, England, assignor to English Clays Lovering Pochin & Company Limited, Cornwall, England

Filed Feb. 8, 1971, Ser. No. 113,337
Claims priority, application Great Britain, Feb. 11, 1970, 6,699/70
Int. Cl. B01d 29/38, 37/00
U.S. Cl. 210—79 2 Claims



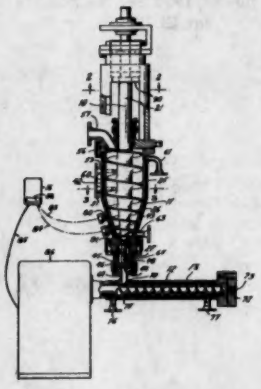
A method of reducing the liquid content of a web particulate solid material in a tube pressure filter in which the hydraulic fluid employed to apply pressure to the wet particulate solid material is raised to its final pressure in at least two distinct stages.

3,687,288

SEPARATOR AND METHOD

John F. Lynch, Chester, Pa.; Murtha E. Moser, Newark, and Raymond A. Nichols, Wilmington, both of Del., assignors to Marco Development Co., Inc., New Castle, Del.

Filed Sept. 3, 1970, Ser. No. 69,214
Int. Cl. B01d 21/26
U.S. Cl. 210—84 20 Claims



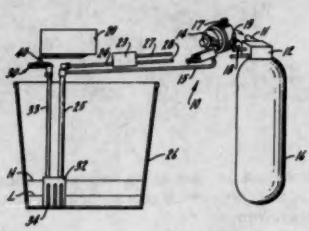
A separator screw and housing with conical intermediate portion and with inlet intermediate its two outlets, has a much greater screw pitch on its forward cylindrical end than in the adjacent end of the conical portion. Beyond the forward outlet is a single cylindrical feed-out screw and housing, with the feed-out screw run at a much slower speed than the separator screw. Pressure sensors in the conical portion of the separator screw give a differential pressure on the basis of which the speed of the feed-out screw is controlled by a proportioning controller. Between the separator screw proper and the rear outlet may be a chamber with longitudinal vanes.

3,687,289

WATER SOFTENER SYSTEM

Edward J. Tischler, St. Paul, Minn., assignor to Ecodyne Corporation

Filed Sept. 4, 1970, Ser. No. 69,683
Int. Cl. B01d 35/00
U.S. Cl. 210—89 7 Claims



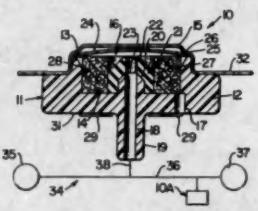
A water softener system including a metering device associated with the soft water line to meter a predetermined proportion of water from the soft water line. This water is directed to a chamber having an adjustable water storage capacity. The proportion of water metered from the soft water line is directly proportional to the storage capacity of the chamber. The water stored in the chamber is periodically directed to the brine storage tank. A timer actuating means is provided to actuate the timer when the liquid level in the brine tank reaches a predetermed level. A float valve is provided to prevent brine from being withdrawn below a predetermined low level in the tank.

3,687,290

PNEUMATIC CONTROL SYSTEM AND TEMPERATURE RESPONSIVE VALVE CONSTRUCTION THEREFOR OR THE LIKE

Ned Myers, Elkhart, Ind., assignor to Robertshaw Controls Company, Richmond, Va.

Continuation of Ser. No. 810,316, March 25, 1969, abandoned. This application Dec. 30, 1970, Ser. No. 102,947
Int. Cl. B01d 35/14
U.S. Cl. 210—149 14 Claims



A temperature responsive valve construction having a housing means provided with an inlet and an outlet formed therein and being separated by a valve seat, a bimetal snap disc being carried by the housing means and disposed on one side of the valve seat so that the snap disc closes the valve seat when the same senses a certain temperature and opens the valve seat when sensing another temperature.

3,687,291

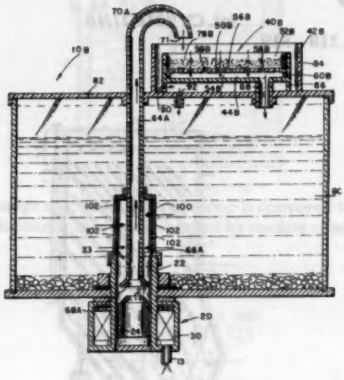
VALVELESS PUMP FOR AN AQUARIUM

Allan H. Willinger, New Rochelle, N.Y., assignor to Metaframe Corporation, Maywood, N.J.

Continuation-in-part of Ser. No. 754,249, Aug. 21, 1968, Pat. No. 3,554,375. This application Aug. 19, 1970, Ser. No. 64,991
Int. Cl. E04b 3/20
U.S. Cl. 210—169 18 Claims

A valveless pump for an aquarium having a portion suitably disposed with respect to the aquarium tank for drawing the

aquarium water into the pump. The pump includes a reciprocating piston which issues a jet of aquarium water from the pump into a tube for flow back to the body of aquarium water within the tank. The pump cooperates with a filtering



device for clearing the aquarium water, wherein the aquarium water may pass through the filtering device before or after the pumping action. Preferably, the pump portion extends through a wall of the aquarium tank.

3,687,292

APPARATUS FOR THE REMOVAL OF FILTER CAKE BY LIQUID INJECTION

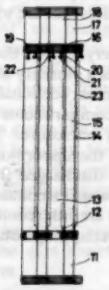
Mitsugi Miura, 13,2-chome, Tezukayama, Sumiyoshi-ken, Osaka, Japan

Filed Sept. 28, 1970, Ser. No. 76,094

Claims priority, application Japan, Oct. 1, 1969, 44/78345

Int. Cl. B01d *25/32*

U.S. Cl. 210—225 **3 Claims**



A method for the removal of filter cake wherein the injection slit is closed during the filtration cycle by the movable injection guide plates which press against the filter cloth, injection water is sprayed onto the cake after the filtration process has been completed by opening the injection slit which extends the width of the cloth by the pressure of the high pressure injection water, and the angle between the injection guide plate and the filter cloth is changed in order to cause the injection water to collide with every part of filter cake.

3,687,293

THERAPEUTIC DEVICE

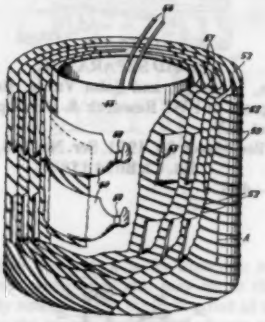
Douglas Vaughan Carter, Bishampton, near Pershore, England, assignor to Avon Rubber Company Limited, Melksham, Wiltshire, England

Filed Oct. 30, 1970, Ser. No. 85,435

Claims priority, application Great Britain, Nov. 5, 1969, 54,275/69

Int. Cl. B01d *31/00*

U.S. Cl. 210—321 **6 Claims**



A haemodialysis unit suitable for use in an artificial kidney machine has a blood conduit which has a wall of semi-permeable material on each of closely spaced opposite sides and plastics material sheet outside and on each side of the conduit. The sheet on each side provides, with a wall of semi-permeable material on that side, walls of a passage for dialysing liquid. On each side of the conduit the sheet has parallel liquid flow-directing ribs which are directed towards and into contact with the wall of semi-permeable material. The ribs on one side of the conduit are at an angle to the ribs on the opposite side. The blood conduit may be in the form of a tube or tubes of semi-permeable material and this may be coiled together with a length of a novel form of plastics material sheet which has ribs on both sides, the ribs on one side of the sheet being at an angle to the ribs on the other side.

3,687,294

Patent Not Issued For This Number

3,687,295

FILTER CONVEYOR BAND FOR A CONTINUOUSLY OPERATING FILTER PRESS

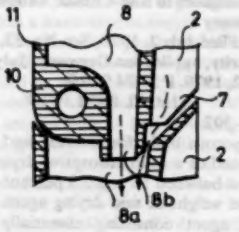
Hans Gujer, Glattalstrasse 149, Rumlang, Switzerland

Filed Nov. 19, 1970, Ser. No. 91,121

Claims priority, application Switzerland, Nov. 25, 1969, 17530/69

Int. Cl. B01d *33/04*; B30b *9/02*

U.S. Cl. 210—324 **3 Claims**



A filter conveyor band for a continuously operating filter press comprising a plurality of hingedly interconnected links,

and means defining a drainage channel at the rear face of each link. The drainage channel includes a portion widening in the direction of the rear end of each such link, with the rear drainage surface of each link opening into its drainage channel. Each drainage channel is equipped at the forward end thereof, as regards the direction of movement of the band, with narrowing guide shoulder or projection means which protrude into the widened portion of the drainage channel of the next forwardly disposed link.

3,687,296

FLUID SEPARATOR

Dom Spinosa, Wantagh, and John Varga, Bayville, both of N.Y., assignors to EWI Research & Development Corporation, Syosset, N.Y.

Filed March 26, 1971, Ser. No. 128,415
Int. Cl. B01d *35/00*
U.S. Cl. 210—406 **12 Claims**

A fluid separator having a tubular member slideably mounted in an entrance opening of an outer container by means of a first stopper. A porous filter is mounted on the inner end of said tubular member while a second stopper is provided on the other end thereof. The outer container is substantially evacuated, said second stopper being adapted to permit the passage of a hollow needle therethrough for the insertion of the fluid to be separated into said tubular member. Said filter means separates the fluid from heavier materials therein upon the withdrawal of said tubular member from said outer container.

3,687,297

SHAPED BODY FOR FILTERING AND DRYING OF LIQUIDS AND GASES AND PROCESS OF MAKING THE SAME

Konrad Kuhn, and Manfred Boedecker, both of Hannover, Germany, assignors to Kali-Chemie Aktiengesellschaft, Hannover, Germany

Filed July 2, 1970, Ser. No. 52,122
Claims priority, application Germany, July 4, 1969, P 19 34 030.8; May 22, 1970, P 20 24 910.9
Int. Cl. B01d *39/00*
U.S. Cl. 210—502 **16 Claims**

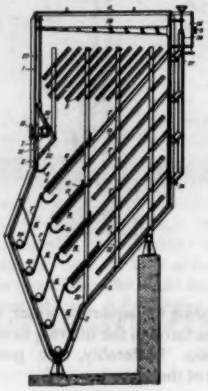
A shaped porous body for filtering and drying gases and liquids is formed of a solid adsorptive drying agent or adsorbent and about between 10 and 0.3 percent of a binding agent relative to the weight of said drying agent or adsorbent, the said binding agent consisting essentially of the reaction product between a di- or polyisocyanate and a polyester or polyetherpolyol which reaction product is hardened to a polyurethane.

3,687,298

APPARATUS FOR SEDIMENTATION OF SOLID IMPURITIES FROM LIQUIDS

Jiri Rozkydalek, Brno, Czechoslovakia, assignor to Separa Brno, inzenyrska Kancelar, Brno, Czechoslovakia

Filed May 20, 1970, Ser. No. 39,046
Claims priority, application Czechoslovakia, May 22, 1969, 3644-69
Int. Cl. B01d *21/10*
U.S. Cl. 210—519 **7 Claims**



A method of multistage continuous sedimentation and separation of solids from liquids consists in guiding the main stream of contaminated liquid through a succession of stages preceding under common hydraulic pressure. In this succession liquid is caused to follow an inclined path and to pass alternately through laminar flow areas where settling of solids takes place, and through turbulent flow areas where agglomerating of finer particles, particularly under dosing of chemical coagulants, occurs. In the successive stages the upward flow rate of the liquid is progressively reduced and successively finer solids thus caused to settle therein. The progressive reducing of the liquid flow rate is achieved by regulating of withdrawal of the cleaned liquid from the single stages to a value which is equal or smaller than the minimum sedimentation rate of solids that are to be separated in the corresponding stage.

An apparatus for carrying out the multistage continuous sedimentation comprises a plurality of separate compartments having an identical cross sectional area and conforming oblique bottoms. The compartments are installed one above another in a common enclosure. The waste liquid to be cleaned is admitted to the uppermost compartment and the clarified liquid portion discharged from the top parts of the single compartments towards a common take-off level. The individual compartments are interconnected by means of overflow gaps defined by overlapping bottom sections thereof.

3,687,299

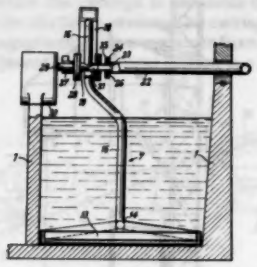
TANK FOR THE PURIFICATION OF WASTE WATER

Joh. Conrad Stengelin, Obere Vorstadt 21, Tuttlingen, Germany

Filed May 18, 1971, Ser. No. 144,619
Int. Cl. B01d *21/24*
U.S. Cl. 210—523 **23 Claims**

A tank for water purification with a sludge remover rotatable within the same to scoop up sludge from the tank bottom;

the sludge remover thereby includes a scoop connected with a suction pipe leading to a discharge conduit in such a manner

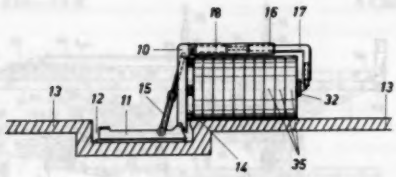


that the sludge scooped up by the scoop is conveyed to its ultimate destination for further treatment by suction effect.

ERRATUM

For Class 212—56 see:
Patent No. 3,687,323

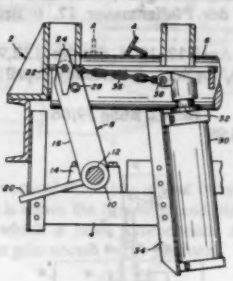
3,687,300
LOAD HANDLING MECHANISM
Per Ulf Andersson, Bovallstrandsgatan 5E, Goteborg, Sweden
Filed Dec. 7, 1970, Ser. No. 95,558
Int. Cl. B65g 7/00
U.S. Cl. 214—1 Q **6 Claims**



To turn large pieces of goods 90° a mechanism is provided, which includes a platform hingedly connected to a base structure in such a manner that the upper face of the platform will be flush with the level of a spot upon which large pieces of goods to be turned 90° are brought. This spot may be a weighing machine or a part of a conveyor. The platform is provided with a telescopic pillar mounted perpendicurlarly thereto, which at its end remote from the platform is provided with an arm extending over the platform. Power operated means are provided, to swing the platform 90° in relation to the base structure, and to adjust the length of the telescopic pillar, respectively, to make the arm thereof fore a piece of goods placed on abovementioned spot towards the platform, when the latter has been brought to vertical position. Thereupon the platform may be swung back to horizontal position, while the pillar and the arm maintain the piece of goods locked upon the platform.

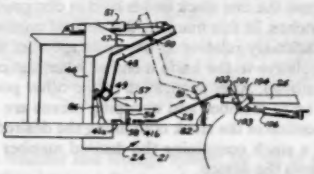
3,687,301
APPARATUS FOR TURNING ELONGATED ARTICLES
Lawrence A. Dailey, assignor to United States Steel Corporation
Filed March 29, 1971, Ser. No. 128,834
Int. Cl. B65g 7/00
U.S. Cl. 214—1 QG **16 Claims**

Apparatus of the invention is especially suitable for utilization in conjunction with the conveyor table of a reversing rolling mill used for rolling lengths of T-bars, angle bars and other similar elongated shapes of metal. The apparatus is normally disposed between a pair of adjacent rollers of the conveyor table and consists of a fluid pressure cylinder rigidly mounted in substantially upright position adjacent one side of the roller table and a counterweighted substantially U-shape frame pivoted on the bottom of the roller table opposite the cylinder for movement between one position toward the cylinder between the pair of adjacent rollers and another posi-



tion remote from the rollers in the direction away from the cylinder. A link member, which may be in the shape of a chain, normally extends from the piston rod of the fluid pressure cylinder to the upper portion of the frame member below the upper surface of the rollers of the roller table. A pair of fingers projects upwardly from the frame and is adapted to engage an elongated article on the table and cause it to be turned about the fingers when the cylinder is actuated, the chain is raised, and the frame is pivoted toward the cylinder.

3,687,302
MACHINE FOR FORMING TIED STACKS OF BALES
Manuel A. Castro, P.O. Box 193, Banta, Calif.
Filed June 17, 1971, Ser. No. 154,006
Int. Cl. B65g 57/32
U.S. Cl. 214—6 B **9 Claims**



A commercially available automatic bale stacking machine is modified to facilitate forming a tied stack, i.e., a stack in which bales in some of the layers are oriented in different directions, to make the stack more stable when lifted by a fork truck or transported in a flat-bed truck. Bales are lifted from the ground by a loader which is located on one side of the machine in operative position and deposited on a stationary first bed which has a transverse conveyor capable of positioning two bales end-to-end. A superstructure extending above the first bed pivotally mounts an arm which swings in a vertical plane as controlled by a hydraulic cylinder and has a pusher bar on its lower end to push bales from the first table to a rearwardly disposed second table. A first actuating lever by means of a valve actuating linkage starts operative or rearward movement of the pusher bar when two bales are in position on the first table. A second actuating lever commences the retractive or forward movement of the bar when the bales have been transferred to the second table. A third actuating lever holds the bar stationary in retracted or neutral position until the first lever is actuated. The second and third tables of the machine

pivot substantially as in the commercial machine. The second table has projectable and retractable spikes which function with other mechanisms to turn the bales 90° under control of the operator.

3,687,303

APPARATUS FOR REMOVAL OF A CERTAIN NUMBER OF PLATES FROM A STACK OF PLATES

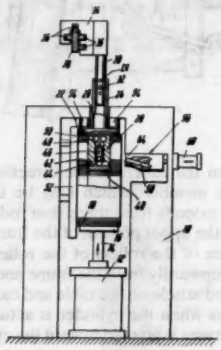
Willi Kramer, Schlesienring 20, 6368 Bad Vilbel, and Willi Muskulus, An der Pfaffenmauer 17, 6 Bergen Enkheim, Germany

Filed April 12, 1971, Ser. No. 132,998

Claims priority, application Germany, April 24, 1970, P 20 19 924.0

Int. Cl. B65g *59/06*

U.S. Cl. 214—8.5 SS 9 Claims



A device for removing a desired number of plates from a stack of plates such as a stack of punched plates for making stators for electric motors. The stack is held in compression and a knife member is brought into contact with the side of a certain plate in the stack thus locating a desired number of plates between the knife and one end of the stack. Clamping means are provided adjacent the knife member to engage the stack such that when the compressive force holding the entire stack is removed, the portion of the stack between the clamping means and the one stack end is held in compression by the clamping means. In this manner, the desired number of plates are held stationary relative to the knife member and thus do not move relative to the knife member when the compressive force is removed. After separation of the other portion of the stack, the knife member and clamping means are disengaged from the portion of the stack containing the desired number of plates and a stack containing the desired number of plates is removed from the device.

3,687,304

Patent Not Issued For This Number

3,687,305

DEVICES IN TRANSPORT LIFTS

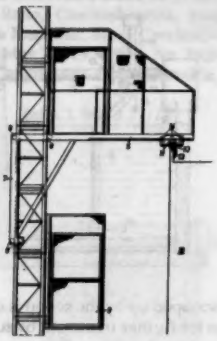
Tage Westerlund, Skelleftea, Sweden, assignor to Linden-Alimak AB, Skelleftea, Sweden

Filed June 1, 1970, Ser. No. 42,117

Int. Cl. B65g *67/58*

U.S. Cl. 214—14 1 Claim

Improvements in devices in transport lifts particularly for transport between a quay and a ship and comprising a base adapted to be disposed on the quay or the ground and a lift mast supported from said base with a lift cage adapted to travel thereon between said base and at least one further stop level, said stop level comprising a bridge, a platform or the like. A second mast is arranged beside the lift mast and on this second mast a bridge is supported in a constantly substantially horizontal position, being vertically slidable on such second mast. The bridge extends from said second mast towards the



place to which transports are to be made, such as the deck of a ship lying at the quay, said bridge with its free end resting on said ship deck.

3,687,306

UNSTACKING MACHINE

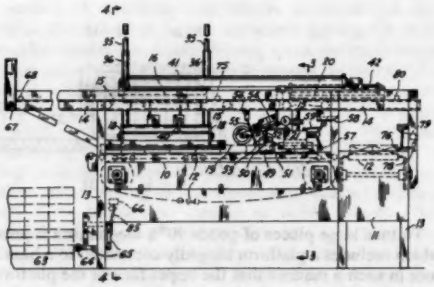
Arthur Charles Ransom, Wollongong, Australia, assignor to Marley Wollongong Limited

Filed Nov. 4, 1970, Ser. No. 86,769

Claims priority, application Australia, July 29, 1970, 18201/70

Int. Cl. B65g *59/00*

U.S. Cl. 214—8.5 C 4 Claims



A machine for handling stacked articles, such as concrete masonry blocks, has two trolleys fitted with gripping attachments. One gripping attachment is used to lift the articles from a stack and deposits them on a conveyor. The other trolley and gripping attachment removes the articles from the conveyor and places them on a second conveyor. From the second conveyor, the articles may be fed to a required destination which, in the case of concrete masonry blocks, may be a splitting machine.

3,687,307

DEVICE FOR EMPTYING FLOATING CONTAINERS

Karl Macrander, and Heinrich Kessel, both of Wilhelmshaven, Germany, assignors to Fried Krupp Gesellschaft mit beschraukter Haftung, Essen, Germany

Filed June 1, 1971, Ser. No. 148,509

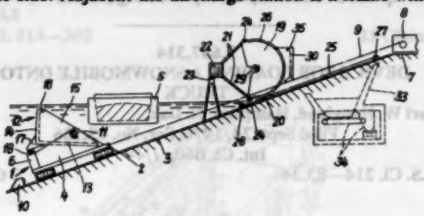
Claims priority, application Germany, July 15, 1970, P 20 34 991.1

Int. Cl. B65j *65/34*

U.S. Cl. 214—12 8 Claims

The specification discloses a device for engaging containers floating in the water and for moving the containers from the

water to a discharge station and for tilting the containers to discharge the contents thereof into the discharge station. The arrangement comprises a carriage and an inclined track arrangement on which the carriage is moveable from beneath the water up to the discharge station. The carriage supports a tiltable cradle engagement with a container from beneath and on one side. Adjacent the discharge station is a frame which



engages the container on the other side and which also operatively engages the cradle and which frame is caused to rotate in response to movement of the carriage for the discharge station. When the frame is engaged with the container and cradle the container and cradle are caused to rotate with the frame and thereby tilt the container and discharge the contents therefrom into the discharge station.

3,687,308

SHIP'S LOADING RAMP

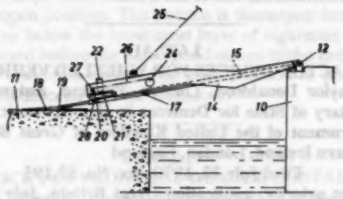
Lennart Apelstrand, Kapplandsgatan 76, Goteborg; Per Fagerlund, Organistvagen 6, Torslanda, and Stig Jarl, Badvadersgatan 23, Goteborg, all of Sweden

Filed Oct. 7, 1970, Ser. No. 78,860

Claims priority, application Sweden, Nov. 11, 1969, 15428/69

Int. Cl. B65g 67/58

U.S. Cl. 214—15 R **5 Claims**



A loading ramp pivotally connected to a ship comprises two unitary side beams and a travelling track carried thereby. This travelling track is composed of two parts of which an inner one extends outwards from the ship along part of the length of the beams to which it is permanently fixed. An outer part of the travelling track is hingedly connected to the inner part and is longer than the difference between the inner part and the length of the beams. The outer part is further provided with laterally extending portions upon which the ends of the beams will rest when the ramp is folded down.

3,687,309

DEVICE FOR TRANSLOADING FLOATING CONTAINERS

Karl Macrander, Wilhelmshaven, Germany, assignor to Fried Krupp Gesellschaft mit beschrankter Haftung, Essen, Germany

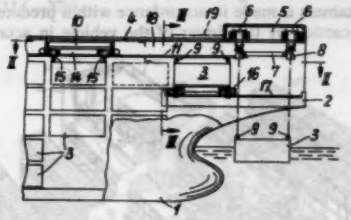
Filed June 1, 1971, Ser. No. 148,610

Claims priority, application Germany, July 7, 1970, P 20 33 594.8

Int. Cl. B63b 27/16

U.S. Cl. 214—15 R **6 Claims**

The specification discloses a transloading arrangement for a ship in which a first hoist is supported in the ship to travel along the hold thereof and at one end of the ship is located over a moveable platform. The platform is moveable in the ship from beneath the first hoist to beneath a second hoist. The second hoist adapted to move containers from above the



platform in the vertical direction to and from the water. The deck of the ship is above the first hoist and platform and has a hatch through which a hoist independent of the first and second hoists can gain access to the platform.

3,687,310

Patent Not Issued For This Number

3,687,311

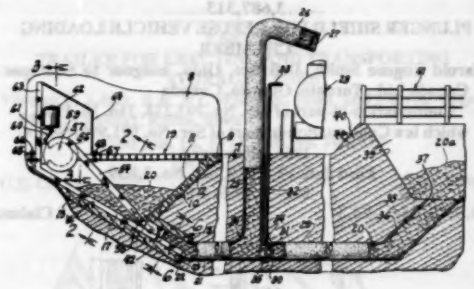
MANURE TRANSFER AND STORAGE SYSTEM

Clinton A. Nesseth, Rt. # 1, Box 29, Dafter, Mich.

Filed March 24, 1971, Ser. No. 127,582

Int. Cl. B65g 25/08

U.S. Cl. 214—16 R **6 Claims**



A manure transfer and storage system for use in an animal housing building having a floor, and which includes a manure collection pit disposed beneath the floor of the building for receiving manure, and transfer means disposed under the building and connected to the lower end of the collection pit for transferring manure from the collection pit to the exterior of the building. A manure storage means is provided at a point exterior of the building for receiving manure from the transfer means and storing the manure for future use. The transfer means is also provided with a spreader loading station for transferring manure to a spreading machine.

3,687,312

WAREHOUSING SYSTEM

Stanley M. Weir, 4296 Wilkie Way, Palo Alto, Calif.

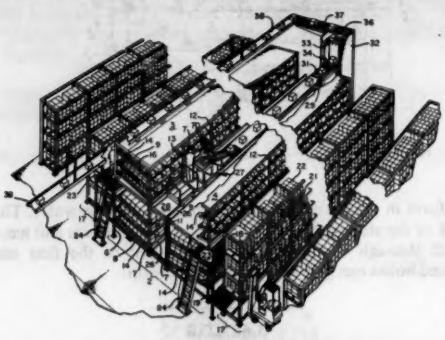
Division of Ser. No. 810,415, Nov. 19, 1968, Pat. No. 3,533,498, which is a division of Ser. No. 697,942, Jan. 15, 1968, Pat. No. 3,447,699. This application June 8, 1970, Ser. No. 44,395

Int. Cl. B65g 1/06

U.S. Cl. 214—16.4 A **1 Claim**

Power-driven warehouse equipment facilitates accurate and rapid selection of articles of commerce for distribution to

warehouse outlets. A mobile track-mounted order-selection vehicle under the control of a warehouseman moves along an aisle formed by storage racks arranged in rows. Each rack is divided into compartments or slots, each slot containing cases, cartons or containers of a designated article of commerce. As the vehicle moves along the slots, selection of type and quantity of containers is made in accordance with a predetermined program carried by the driver of the vehicle in accordance



with order picking instructions displayed for him by a display unit on the vehicle. Following selection of the requisite type and quantity of containers, each container is automatically labeled with a label which indicates the type, quantity and destination information imprinted thereon according to a program, and the containers are mechanically transported to an area where they are automatically diverted to accomplish assembly of orders in accordance with their proper destination.

3,687,313

PLUNGER SHIELD FOR REFUSE VEHICLE LOADING CHAMBER

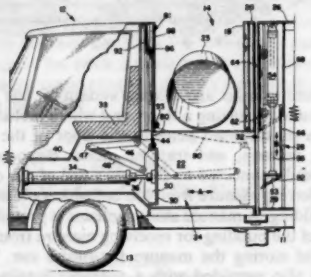
Harold Eugene Smith, Defiance, Ohio, assignor to Smithpac Canada Ltd., Toronto, Ontario, Canada

Continuation-in-part of Ser. No. 703,214, Jan. 18, 1968, which is a Continuation-in-part of Ser. No. 591,996, Nov. 4, 1966, abandoned.

Filed Jan. 19, 1970, Ser. No. 3,839

Int. Cl. B65f *3/00*

U.S. Cl. 214—83.3 **2 Claims**



A refuse-collecting apparatus or vehicle includes a supporting frame or chassis having a refuse-receiving receptacle pivotally mounted thereon for tilting movement between a generally horizontal loading position and a tilted dumping position. A loading plunger is provided within a fixed loading chamber on the chassis for the purpose of pushing refuse from the loading chamber through a loading aperture into the refuse-receiving receptacle when the latter is disposed in its generally horizontal loading position. A contractable shield is affixed to the loading plunger and extends outwardly therefrom relative to the refuse-receiving receptacle and is movable with the loading plunger for the purpose of preventing refuse falling into the loading chamber outwardly of the loading plunger. In one arrangement, such a contractable shield includes a flexible curtain and a resiliently extensible spring means attached to the flexible curtain and suitably anchored on the vehicle. In another construction, the contractable shield includes a pair of generally planar plates which are movable between an extended position of minimum overlap and a retracted telescoped configuration.

3,687,314

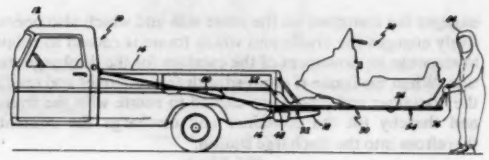
DEVICE FOR LOADING A SNOWMOBILE ONTO A TRUCK

Earl W. Haugland, Hampden, N. Dak.

Filed Sept. 24, 1970, Ser. No. 75,136

Int. Cl. B60p *1/44*

U.S. Cl. 214—83.24 **9 Claims**



The device comprises two hinged sections, one section having wheels thereon and the other initially serving as an inclined ramp. With the wheeled section resting on the tailgate or floor of a truck, the snowmobile is first moved onto the ramp section. The ramp section is then raised so that it is horizontal with the wheeled section and the entire device is moved forwardly along the flooring of the truck by means of the wheels so that both the device and snowmobile are fully contained within the box of the truck.

3,687,315

REACTOR DEVICES FOR WHEELED VEHICLES

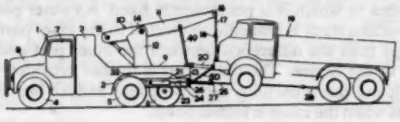
John Taylor Donaldson, London, England, assignor to The Secretary of State for Denfense in Her Britannic Majesty's Government of the United Kingdom of Great Britain and Northern Ireland, London, England

Filed July 22, 1970, Ser. No. 57,195

Claims priority, application Great Britain, July 22, 1969, 36,709/69

Int. Cl. B60p *3/12*

U.S. Cl. 214—86 A **8 Claims**



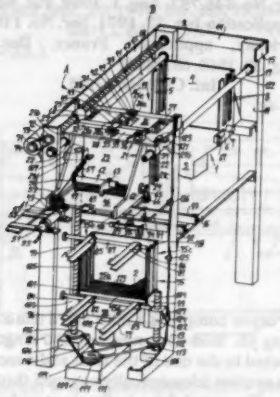
A reactor device for attachment to a wheeled towing vehicle having a crane from which an adjacent end of a casualty vehicle may be suspended incorporates a compression member attached to the towing vehicle and adapted for attachment to the adjacent end of the casualty vehicle; a tension device attached, below the compression member, to the towing vehicle and adapted for attachment to the casualty vehicle whereby a tensile force produced in the tension device will induce in the compression member a compressive force which, with said tensile force, constitutes a couple tending to increase the contact forces between the ground and front wheels of the towing vehicle.

3,687,316

APPARATUS FOR SUPPLYING ROD-SHAPED ARTICLES TO CONSUMING MACHINES

Gunter Wahle, Reinbek, Germany, assignor to Hauni-Werke Korber & Co. KG, Hamburg, Germany

Filed March 3, 1970, Ser. No. 15,983
Claims priority, application Germany, March 4, 1969, P 19 10 843.1
U.S. Cl. 214—302 21 Claims



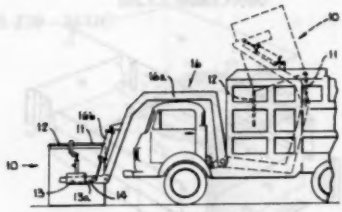
Apparatus which transfers the contents of cigarette trays into the magazine of a packing machine, comprises a carriage movable between a first station above the magazine and a second station above a platform which introduces into the carriage filled trays from below while the bottom of the carriage is held in open position. The bottom is thereupon introduced into the tray below the lowermost layer of cigarettes and the tray is lowered before the carriage advances to the first station where the bottom is returned to open position to permit the cigarettes to descend into the magazine.

3,687,317

LID LOCK FOR FRONT END LOADER CONTAINER

Charles T. Gagel, Louisville, Ky., assignor to Industrial Services of America, Inc., Louisville, Ky.

Filed April 26, 1971, Ser. No. 137,507
Int. Cl. B65f 3/02
U.S. Cl. 214—304 3 Claims



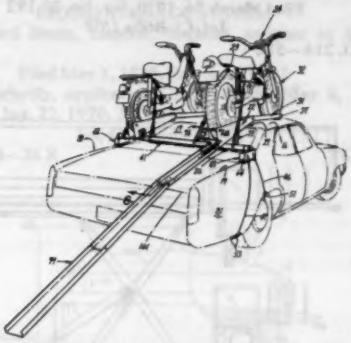
Disclosed is a spring loaded member or arm for locking closed and overlapping, dual top lids of a container adapted to be picked up and inverted for unloading by a conventional front end loader type truck. The lock member is automatically moved to lid-releasing position when the pick-up arms of the truck start their initial container-lifting motion.

3,687,318

MOTORCYCLE MOUNT FOR AUTOMOBILE BODIES

Norris A. Casey, 4658 Greenbush Dr., Concord, Calif., and James R. Ivy, 2 Bristol Court, Pleasant Hill, Calif.

Filed Aug. 24, 1970, Ser. No. 66,453
Int. Cl. B60r 9/00
U.S. Cl. 214—450 6 Claims



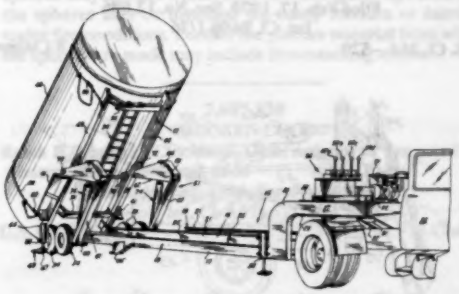
A motorcycle mount for conventional automobile bodies and including an elongated trough-shaped section for receiving and anchoring therein at least the rear wheel of the motorcycle and front and rear mounting means for the section which is dimensioned and constructed for resting upon strong point areas of the conventional automobile body, namely the top corner portion at the rear window area and the side corner portions surmounting the rear fenders of the body.

3,687,319

TRAILER FOR ERECTING AND TRANSPORTING STORAGE TANKS

Vernon F. Adam, R.R. #1, Wellman, Iowa, and Carl A. Vogel, 110 N. Chesnay, Keota, Iowa

Filed Jan. 14, 1971, Ser. No. 106,379
Int. Cl. B60p 1/16
U.S. Cl. 214—501 6 Claims



The tank handling trailer includes an elongated main frame connectible at its front end to a tractor and having a tank supporting mast pivotally supported at its rear end for movement from an upright tank erecting position to a horizontal forwardly extended transport position overlying about the rear half length of the main frame. A tank in picked up directly by the upright pivoted mast, and then moved to a horizontal position wherein it is supported on the mast and main frame for transport to an erection location. The tank is erected by simply moving the pivoted mast from the horizontal transport position to the upright tank erecting position therefor.

3,687,320

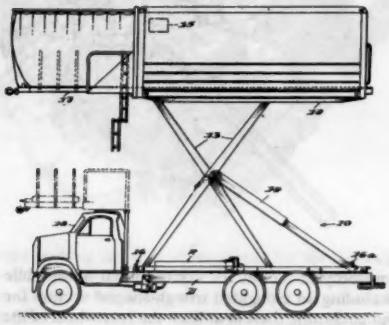
Patent Not Issued For This Number

3,687,321

LOAD CARRYING VEHICLE

Steven E. Goodhart, and Alfred C. Channels, both of Vineland, N.J., assignors to Stanray Corporation, Chicago, Ill.

Filed March 24, 1970, Ser. No. 22,192
Int. Cl. B60p *1/02*
U.S. Cl. 214—512 4 Claims



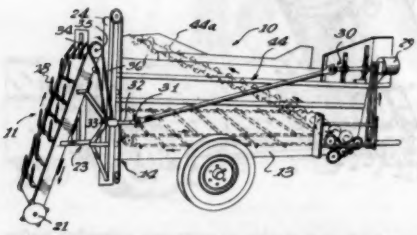
This invention relates to vehicles adapted to load and unload cargo and other material into and from aircraft. The present vehicle is provided with a loading platform which can be elevated, laterally adjusted and extended forwardly for alignment with an opening in the aircraft. Controls are provided to prevent abnormal contact or misalignment between the platform and aircraft as well as to automatically raise or lower the platform when the height of the opening above ground level varies due to loading or unloading.

3,687,322

APPARATUS FOR TRANSFERRING PILED SILAGE

Arthur J. Stieren, R.R. #2, Box 153, West Point, Nebr.

Filed Feb. 17, 1970, Ser. No. 12,086
Int. Cl. B60p *1/36*
U.S. Cl. 214—520 8 Claims



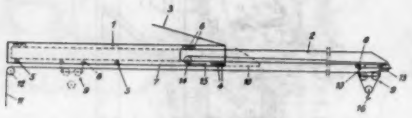
An apparatus for transferring piled silage and the like including a conveyor and means for mounting the conveyor on a receptacle such as a truck body. Means are provided for selectively disposing the conveyor in an operative position wherein the lower end of the conveyor is disposed to engage piled silage and the like for transfer thereof by the conveyor to a discharge position. In the operating arrangement, the discharge position is located to discharge the conveyed silage into the truck body receptacle. The means for mounting the conveyor further defines means for elevating the conveyor to a retracted position permitting the apparatus to be moved as desired substantially in the manner of a conventional truck. The conveyor is provided with support means for engaging the ground in the operative position for facilitated transfer of the silage. The conveyor may have a width substantially equal to the width of the body receptacle for improved, fast transfer of the silage material.

3,687,323

TOWER CRANE WITH TELESCOPIC JIB

Pierre Joseph Pingon, 5 avenue du Parmelan, Annecy, France

Division of Ser. No. 846,792, Aug. 1, 1969, Pat. No. 3,596,772.
This application Jan. 27, 1971, Ser. No. 110,066
Claims priority, application France, Dec. 24, 1968, 68180317; Aug. 30, 1968, 68164641
Int. Cl. B66c *23/06*
U.S. Cl. 212—56 4 Claims



This tower crane comprises a mast and a telescopic horizontally extending jib. Said jib is made of two lengths, i.e. a first length connected to the end of the mast and a second length of smaller cross section telescopically engaged through said first jib length. A rolling track for a trolley is provided in the lower portion of the first jib length. A further rolling track is arranged adjacent the free end of the second jib length, at the lower portion thereof, whereby in fully telescoped condition of the jib the rolling track provided on the second jib length form an extension of the rolling track pertaining to the first jib length. Latching means are provided for impeding undue movement of the trolley when the jib lengths are not in a fully telescoped condition.

3,687,324

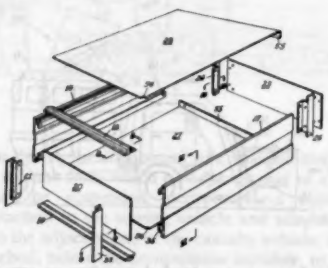
Patent Not Issued For This Number

3,687,325

INSTRUMENT CASE OF ASSEMBLED MODULAR ELEMENTS

Ira W. Simons, Columbus, Ohio, assignor to The Buckeye Stamping Company, Columbus, Ohio

Filed Nov. 23, 1970, Ser. No. 92,012
Int. Cl. B65d *7/00*
U.S. Cl. 220—4 R 8 Claims



An instrument case formed from modular elements which can be assembled in different multiples and sizes to obtain cases of different sizes so as to vary the capacities of the respective cases. It consists of modular elements, certain of

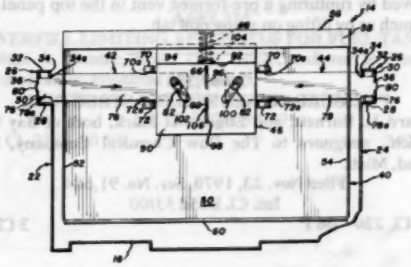
which are standardized metal extrusions and others of which are standardized sheet metal panels, which are varied in certain dimensions in accordance with the desired size of the case. Various of these elements interfit in assembling and are retained in assembled condition by fasteners which are not visible from the front of the case.

3,687,326

FOLLOWERS FOR FILING UNITS

Charles B. Belknap, and James R. Drum, both of Muscatine, Iowa, assignors to Hon Industries Inc., Muscatine, Iowa

Filed Sept. 24, 1970, Ser. No. 75,064
Int. Cl. B65d *25/06*
U.S. Cl. 220—22.3 16 Claims



Disclosed herein is a follower plate with a pair of laterally extending reciprocable L-shaped guide members having outer legs which engage guideways in a file receptacle unit. The guide members are spring biased outwardly and include outwardly extending prongs normally engaging apertures in the guideways to maintain the follower assembly in a predetermined position. A central opening plate has a cam and follower connection with the guide members and is drawn upward by the operator against the force of the biasing spring to effect release of the follower for desired longitudinal movement in the file unit. The guides, operating plate and spring are retained by flanges and tabs formed from the follower plate.

3,687,327

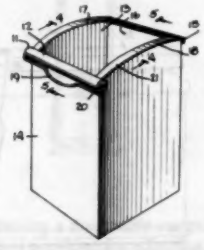
Patent Not Issued For This Number

3,687,328

SELF-RETRACTING COVER

Harry Spruyt, 419 East 91st St., New York, N.Y., and Louis Hoffman, Evans Farm Road, Morristown, N.J., assignors to Harry Spruyt, New York, N.Y. and Louis Hoffman, Morristown, N.J.

Filed April 28, 1971, Ser. No. 138,128
Int. Cl. B65d *39/00*
U.S. Cl. 220—24 GC 10 Claims



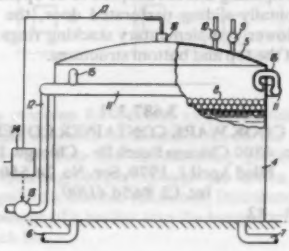
The disclosure relates to a self-retracting cover device for an opening such as is found in a container. The cover of the device is formed from flexible sheet material possessing self-coiling properties and is arranged so that when the cover is open, it self-retracts out of the way. When the cover is closed, a combination of the properties of the cover sheet material and the geometry of the surface over which it is drawn causes the cover to be held firmly against the edges or perimeter of the opening, thus effecting the closure.

3,687,329

LIQUID STORAGE SYSTEM

Hans Eduard Baum, London, England, assignor to Allplas A.G.

Filed May 1, 1970, Ser. No. 33,593
Claims priority, application Great Britain, May 8, 1969, 23,549/69; Jan. 22, 1970, 3,228/70
Int. Cl. B65d *87/18*
U.S. Cl. 220—26 R 2 Claims



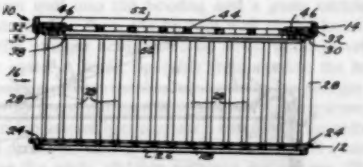
To reduce the fire risk when flammable liquids are stored in bulk, the surface of the liquid is completely occupied by closely packed hollow buoyant spheres formed of moulded plastics. Preferably a sufficient number of said spheres is provided to form a blanket on the surface of the liquid consisting of several layers, for example four layers. Depending on the nature of the liquid and on the storage conditions within the container no special additional precautions may be necessary but in some cases means may be included for supplying an inert gas to a point above the liquid level, or means may be provided for supplying a fire-fighting foam on to the blanket formed by the hollow spheres so that the foam is caused to spread over the surface of the stored liquid. The hollow spheres may contain within them fire-extinguishing media and the spheres may be arranged for ready fracture or bursting under fire conditions. Further the plastics material from which the spheres are made may include fire-retarding media.

3,687,330

CHICKEN COOP

Ralph H. Herolzer, Cincinnati, Ohio, assignor to Vanguard Industries Inc., Cincinnati, Ohio

Filed Jan. 21, 1971, Ser. No. 108,551
Int. Cl. A01k *31/18*
U.S. Cl. 220—41 13 Claims



A chicken coop comprising a generally horizontally extending perforated bottom structure molded of a foamed plastic material integral with a four-sided peripheral wall structure, the latter including a plurality of horizontally spaced vertically

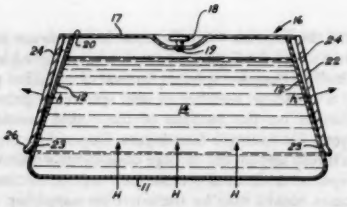
coextensive elongated elements integrally connected at their lower ends with the periphery of the bottom structure and at their upper ends with a continuous peripheral portion, each of the elongated elements including an inner portion disposed inwardly of the adjacent peripheral portion and presenting a smooth interior peripheral surface which merges smoothly into the peripheral surface of the remaining portion of the elongated element, the inner portion of each elongated element forming the maximum thickness thereof measured in the direction of horizontal extent of the adjacent peripheral portion, the thickness of each elongated element measured in a direction perpendicular to the maximum thickness being at least as great as such maximum thickness, the peripheral portion and the vertically coextensive ends of the elongated elements being adapted to engage within a channel-shaped peripheral portion formed on a separate perforated top structure molded of foamed plastic material and being fixedly interconnected therewith, the top structure having a relatively large access opening therein adapted to be opened and closed by a horizontally sliding perforated door, the coop having upper and lower complementary stacking rings adjacent the periphery of the top and bottom structures.

3,687,331

COOK WARE CONTAINER COVER

Nick S. Racz, 4800 Chicago Beach Dr., Chicago, Ill.

Filed April 1, 1970, Ser. No. 24,650
Int. Cl. B65d *41/00*
U.S. Cl. 220—42 7 Claims



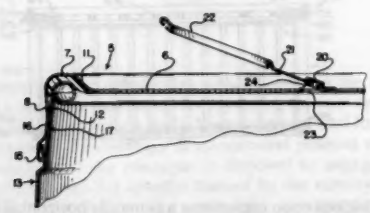
In a cookware container, the cover closes the open top of the heating vessel and extends downward in overlying relationship to a substantial area of the sidewall of the vessel, the portion of the cover which overlies the wall being formed of an insulative material having a thermal conductivity substantially less than the vessel sidewall to reduce heat losses through the wall.

3,687,332

GASKET CUT-THROUGH PREVENTION CLOSURE AND CONTAINER

James E. Westfall, and Donald H. Zipper, both of Western Springs, Ill., assignors to Continental Can Company, Inc., New York, N.Y.

Filed July 15, 1970, Ser. No. 54,900
Int. Cl. B65d *51/16*; B05d *41/12*
U.S. Cl. 220—42 A 5 Claims



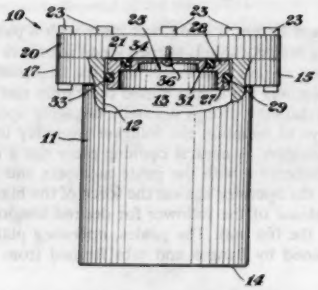
A tamper-proof closure cap of the type having a shell formed with a top panel portion and a depending skirt portion with an annular gasket having appreciable thickness disposed in the outer margin of the top panel. In a preferred embodiment the skirt portion for a substantial part of its height has an outwardly tapered or flared frusto-conical section with a predetermined angle for matching engagement on the correspondingly tapered or flared frusto-conical side finish of the neck of a container so as to positively limit the downward seating movement of the cap on the container neck. Alternately, the skirt may have a curl, bead or seam formed on its bottom edge which engages continuous or interrupted shoulder means on the neck for positively limiting the downward seating of the cap on the container neck. The container for use with the closure cap also has an annular top rim finish for sealing engagement into the gasket. On application the closure cap is pressed over the container neck until seated and retained in place by means of headspace vacuum until removal. It can be readily removed by rupturing a pre-formed vent in the top panel portion such as by lifting on a ring pull tab.

3,687,333

PRESSURE VESSEL SEALING STRUCTURE

Edward L. Burnett, and Eugene V. Stack, both of Bay City, Mich., assignors to The Dow Chemical Company, Midland, Mich.

Filed Nov. 23, 1970, Ser. No. 91,684
Int. Cl. B65d *53/00*
U.S. Cl. 220—46 P 3 Claims



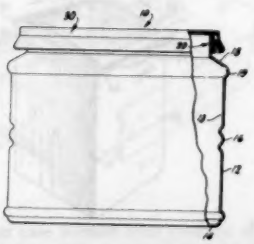
A lightweight sealing structure is provided for pressure vessels wherein a resilient ring carrying two O-rings is positioned adjacent the closure and wall of the vessel. Internal pressure urges the resilient ring and O-rings into sealing engagement with the internal surface of the vessel.

3,687,334

METAL CONTAINER WITH REMOVABLE CLOSURE

Raymond F. McNeil, Daly City, Calif., assignor to Del Monte Corporation, San Francisco, Calif.

Filed Sept. 23, 1970, Ser. No. 74,589
Int. Cl. B65d *43/10*
U.S. Cl. 220—60 R 7 Claims



A metal container having a vacuum sealed closure adapted for convenient and safe removal and which is reclosable. A

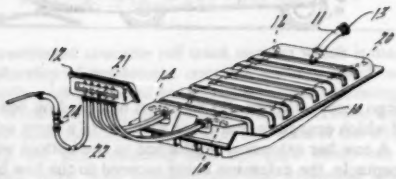
container shell is formed at its open end with an intrusive shoulder and an annular rim formed by folding back the raw metal shell edge. The rim defines an outwardly and downwardly inclined ledge to cooperate with an annular gasket on the closure member for effecting a hermetical seal under the force of atmospheric pressure acting against a vacuum within the container. An annular bead on the rim functions to retain the closure member in place during the capping and sterilizing operations. One preferred embodiment provides a flat gasket on the inside surface of the closure member to cooperate in sealing relationship with the upper edge of the shell rim and in another preferred embodiment the annular gasket is used without the flat gasket.

3,687,335

OVERFILL LIMITING APPARATUS FOR FUEL TANKS

William A. Hunter, Royal Oak, Mich., assignor to Chrysler Corporation, Highland Park, Mich.

Filed Nov. 18, 1970, Ser. No. 90,534
Int. Cl. F02m *59/00*
U.S. Cl. 220—85 VR **3 Claims**



Overfill limiting means for fuel tanks in the form of a normally closed pressure operated valve in a vent line extending from the tank.

3,687,336

PILL DISPENSER WITH REMOVABLE CARTRIDGE

Robert Gayle, Wilton, Conn., assignor to Eli Lilly and Company, Indianapolis, Ind.

Filed Oct. 5, 1970, Ser. No. 77,972
Int. Cl. G07f *11/00*
U.S. Cl. 221—7 **2 Claims**

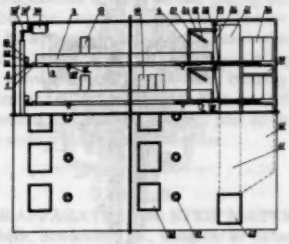
A pill dispenser having a disposable cartridge containing a stack of pills. Means is provided for effecting relative rotation between the cartridge and the dispenser's casing whereby a follower device coupled therebetween ejects a pill in synchronization with a day indicia means.

3,687,337

AUTOMATIC VENDING MACHINE WITH HORIZONTAL ARRANGEMENT

Antonio Burlando, and Silvio Bosco, both of via Marras 11/1, 16131 Genoa, Italy

Filed Oct. 9, 1970, Ser. No. 79,577
Claims priority, application Italy, Oct. 15, 1969, 7389 A/69
Int. Cl. G07f *11/42*
U.S. Cl. 221—129 **6 Claims**



A vending machine for packets of merchandise having a plurality of bins disposed horizontally across the width of the machine. The packets are urged along guiding members towards a dispensing hopper through the action of a packet pusher engaged by a toothed rackwork. Distributor means for permitting passage of a packet into the hopper are disposed at the end of each bin.

3,687,338

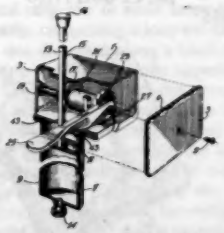
Patent Not Issued For This Number

3,687,339

PASTE DISPENSER AND DISPOSABLE CARTRIDGE THEREFOR

Eloi Dessureault, 1412 Le Caron, Montreal, 205 Quebec, Canada

Filed Oct. 12, 1970, Ser. No. 79,943
Int. Cl. G01f *11/00*
U.S. Cl. 222—183 **2 Claims**



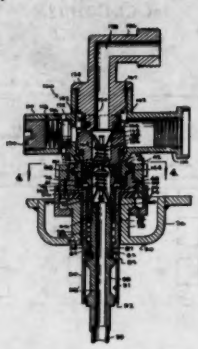
Paste dispenser comprising a control housing having a plunger actuator including a rod slidably extending through the bottom wall into the housing and a paste cartridge assembly depending from the bottom wall of the housing and around the plunger actuator to be acted upon thereby and dispense paste. A lever, operable from outside the housing, acts through a ratchet mechanism to move the plunger actuator down to force the cartridge assembly to dispense paste. The cartridge assembly comprises a cartridge case removably mounted on the bottom of the control housing and a cartridge, containing the paste, slidably received in the case. The case has a nozzle aperture through the bottom thereof for the projection of a nozzle provided at the lower end of the cartridge, there being radial lugs, on the nozzle, inserted in notches around the nozzle aperture to prevent relative rotation of the case and the cartridge.

3,687,340

TAPPING DEVICE FOR BEER KEGS

Remes E. DeLaHunt, Savannah, Ga., assignor to Berry Systems Incorporated, Savannah, Ga.

Filed Oct. 13, 1970, Ser. No. 80,281
Int. Cl. G01f 11/00
U.S. Cl. 222—400.7 9 Claims



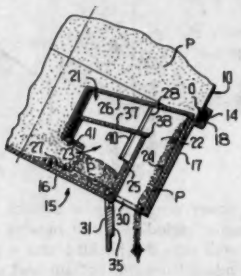
A keg tapping device is provided in which a pressure hose and a liquid discharge hose are connected to a common connector member connectable to a keg fitting on a keg to automatically open valving means in the keg fitting and the common connector to permit discharge of liquid from the keg and pressurization of the keg in response to the connection of the connector to the keg; seal and valve means are automatically closed upon disconnection of the connector from the keg and the keg includes a substantially permanently installed drain pipe so that there is no insertion of any member into the internal confines of the keg during the tapping operation with the connection of the connector and the pressure and lager discharge hoses being made by a simple push down and twisting movement.

3,687,341

METERING DISPENSING CLOSURE

Thomas R. Stanley, Brookfield, and Carmen T. Mascia, Westchester, both of Ill., assignors to Continental Can Company, Inc., New York, N.Y.

Filed Dec. 21, 1970, Ser. No. 100,265
Int. Cl. G01f 11/26
U.S. Cl. 222—455 13 Claims



This disclosure relates to a metering dispensing closure in which a pair of chambers are selectively placed in fluid communication with each other by an axially movable gravity actuated valve housed in one of the chambers. The valve includes a pair of diametrically opposite ports which are alternately in and out of registration with ports formed in the chamber housing the valve. When the closure is inverted a first of the chambers receives a predetermined quantity of a packaged product and upon reversion and subsequent inversion the predetermined quantity is transferred to a second of the chambers and dispensed through a port thereof to atmosphere.

3,687,342

Patent Not Issued For This Number

3,687,343

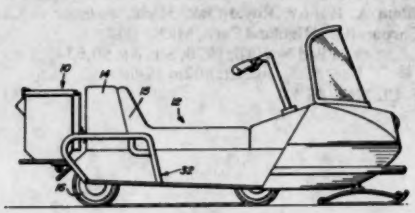
Patent Not Issued For This Number

3,687,344

REAR MOUNTED SNOWMOBILE CARGO BOX WITH TOW BAR EXTENSION

Paul A. Nixon, Rt. #1, 156 Reser Rd., Walla Walla, Wash.

Filed Oct. 2, 1970, Ser. No. 77,500
Int. Cl. B60r 9/00
U.S. Cl. 224—29 R 5 Claims



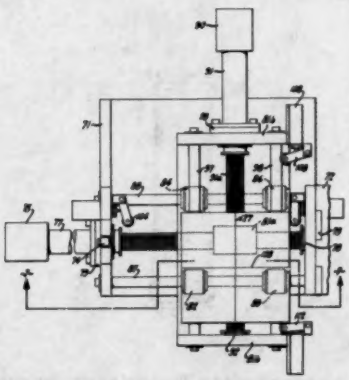
A cargo receptacle has clip members mounted on one wall thereof which engages a rear brace member of a snow vehicle frame. A tow bar extension is attached to the bottom wall of the receptacle, the extension being secured to the tow bar of the snow vehicle. The extension extends rearwardly beyond the receptacle thereby allowing a cargo sled to be tied thereto.

3,687,345

METHOD AND APPARATUS FOR ALIGNING AND BREAKING WAFERS

Heinz F. Carlson, Santa Cruz; George L. Issac, and Graham H. Mosely, both of Sunnyvale, all of Calif., assignors to Signetics Corporation, Sunnyvale, Calif.

Filed Nov. 23, 1970, Ser. No. 91,713
Int. Cl. B26f 3/00
U.S. Cl. 225—1 9 Claims



A method and apparatus for aligning and breaking scribed semiconductor wafers in which a scribed wafer is accurately aligned and mounted on a frame assembly having locating holes. The frame assembly with the wafer attached thereto is

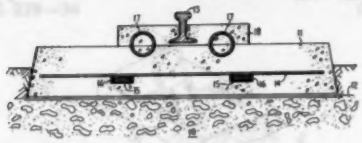
then placed on a breaking platform of a wafer breaker having generally perpendicular first and second breaking ridges and having locating pins which cooperate with the frame assembly locating holes for positioning the frame assembly in alignment with the breaking ridges. Pressure is applied to the frame assembly and wafer for holding them against the breaking platforms. The breaking platform is then translated to cause the wafer to pass over the first and second breaking ridges for breaking the wafer into a plurality of semiconductor chips generally along perpendicular scribe lines on the wafer.

3,687,346

RAIL TRACK SUPPORT

Arthur Elliott Crimp, 40 Victoria St., Potts Point, and Peter Edington Ellen, 16 Cornwall Ave., Turramurra, both of New Zealand

Filed Sept. 15, 1970, Ser. No. 72,284
Int. Cl. E01b *3/38*
U.S. Cl. 238—25 **7 Claims**



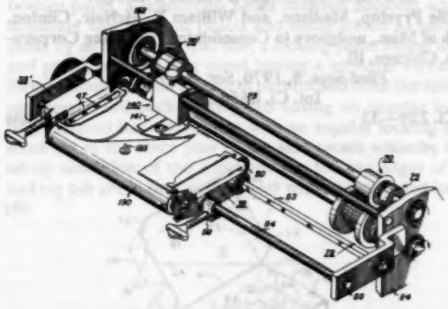
A prestressed concrete rail track support which is made up of a plurality of prestressed concrete sections which are individually post-tensioned by means of bonded stressing tendons. When the strips are laid gaps are left between them so that the tendons may be tensioned. The ends of the stressing tendons are left extending into the gaps which are subsequently filled with concrete and the extending portions separately tensioned. On to the concrete a rail or rails are laid each being securely affixed to the concrete, the strength of the structure is assured by bonding the stressing tendons to the concrete in such a manner that the crack pattern spacing of the structure at ultimate load is less than approximately 15 inches.

3,687,347

QUICK CHANGE LABELING HEAD

Trygve R. Rod, Mundelein, and Thomas S. Evans, Libertyville, both of Ill., assignors to Xerox Corpoation, Stamford, Conn.

Filed June 15, 1971, Ser. No. 153,314
Int. Cl. B65h *17/38*
U.S. Cl. 226—74 **5 Claims**



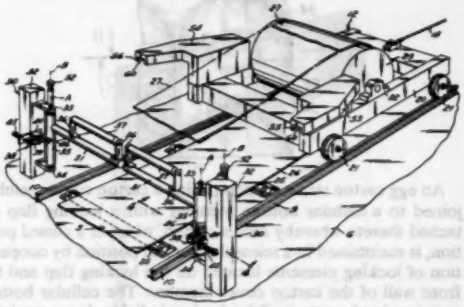
A quick change head for article addressing machines to facilitate changeover from one type label form to another. The head, which uses uncut label form material, includes a transfer wheel for transferring labels or information therefrom to the articles being addressed, a feeder pair cooperable with the form margins to advance the form, a trim knife pair to remove the form margins, a quillotine knife to divide the form into strips several labels long, and a combination strip feeder and knife mechanism to cut the strips into individual labels while feeding the labels to the transfer wheel. To accommodate different types and sizes of label forms, the form feeders and trim knifes are arranged for adjusting movement relative one another, and to facilitate quick yet accurate positioning of these elements, gaging means are provided for each. A quick change gear mechanism using preselected ratios permits the necessary speed change to be readily made in the form feeding and cutting components while a stroke gaging device is provided to enable the stroke of the strip feeder and knife mechanism to be accurately and quickly reset when changing from one form to another. To accommodate marginless type label forms, a conversion belt is provided bearing single row form feeder pins and foldable upon itself in an endless loop in driving engagement with the form feeder pair so that the form feeder pair are converted to a single feeder.

3,687,348

LOOPER APPARATUS FOR STRIP MATERIAL

William R. Scheib, Sewickley, Pa., assignor to Aetna-Standard Engineering Company, Ellwood City, Pa.

Filed May 24, 1971, Ser. No. 146,320
Int. Cl. B65h *17/42*
U.S. Cl. 226—113 **15 Claims**



A looper apparatus for forming in a moving strip of material such as a sheet metal strip one or more loops for temporarily storing a length of strip, comprising a loop car that engages the strip and travels in one direction along a track to form or enlarge a loop in the strip and travels in the opposite direction to diminish the loop. The apparatus includes arms mounted adjacent the track and adapted to be swung to an extended position in which they extend transversely of and overhang the track to support one leg of strip forming the loop as the car travels in its loop-enlarging direction, and to a retracted position in which the arms clear the track as the car travels in loop-diminishing direction. The means for swinging each arm includes a cam groove on the car that is engaged by cam follower means mounted on a member that is moved by the cam follower means to swing the arm to its extended and retracted positions. Means are provided to hold the arm in its extended and retracted positions.

3,687,349

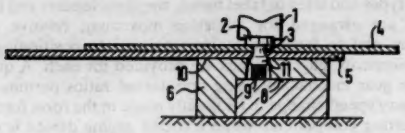
RIVETING APPARATUS

Erich Doring, Thalbachstrasse 8, Moosburg, Germany

Filed Nov. 18, 1970, Ser. No. 90,769
Claims priority, application Germany, Nov. 19, 1969, P 19 58 058.6
Int. Cl. B21j *15/36*
U.S. Cl. 227—61 **6 Claims**

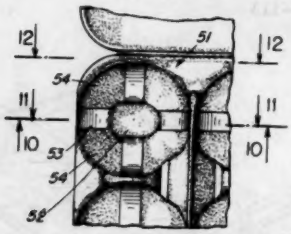
Apparatus for riveting unperforated layers of material supported on a counter-holder. The counter-holder has a recess

for receiving the rivet shank such that the cross section of the recess in the area in which the closing head is formed is larger



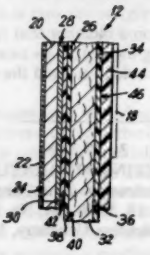
than the cross section of the rivet shank, and the depth of the recess is shorter than the portion of the rivet shank protruding from the layers.

3,687,350
EGG CARTON CELL STRUCTURE
Richard T. Warburton, Canandaigua, N.Y., assignor to Mobil Oil Corporation
Filed June 1, 1970, Ser. No. 42,368
Int. Cl. B65d *85/32*
U.S. Cl. 229—2.5 **1 Claim**



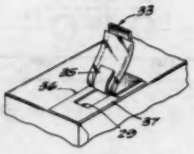
An egg carton structure comprising a carton cover member joined to a cellular bottom member with a locking flap attached thereto whereby such a carton, when in a closed position, is maintained in a releasably locked position by cooperation of locking elements located on the locking flap and the front wall of the carton cover member. The cellular bottom member is characterized by having individual egg-retaining cells specifically designed to minimize or eliminate egg breakage when compressive forces are applied against the closed carton.

3,687,351
COMPOSITE CONTAINER
Ralph William Kaercher, Barrington, and John Robert Platt, Crystal Lake, both of Ill., assignors to American Can Company, Greenwich, Conn.
Filed Sept. 24, 1970, Ser. No. 75,013
Int. Cl. B65d *25/14*
U.S. Cl. 229—3.1 **27 Claims**



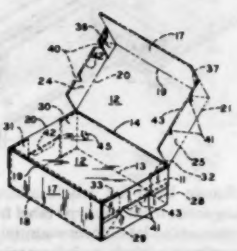
A composite beer or beverage container having a body made from disposable materials comprising a spirally-wound ply of thick, strong aluminum or steel foil forming an inner layer, having an organic slip coat on its inside surface and a thermoplastic adhesive coat on its outside surface, and a spirally wound ply of paperboard forming a middle layer, having a thermoplastic adhesive coat on its inside and outside surfaces. The thermoplastic adhesive coats on the outside surface of the foil layer and on the inside surface of the paperboard layer form a plastic-to-plastic bond between the foil layer and the paperboard layer. An extruded plastic forms an outer layer of the composite container body and provides a plastic-to-plastic bond with the thermoplastic adhesive coat on the outside surface of the paperboard layer. The composite body may be sealed with metal top and bottom end closures.

3,687,352
CONTAINER CLOSURE
Edward Kalajian, 13206-J Admiral Ave., Marina Del Rey, Calif.
Filed March 8, 1971, Ser. No. 121,848
Int. Cl. B65d *17/16*
U.S. Cl. 229—7 R **9 Claims**



A container closure is disclosed for a single service, or non-reuseable, container. In the preferred form of the invention the container has a pair of wall sections made of paper material and placed in side-by-side relationship, the outer surfaces of these wall sections being coated with polyethylene. A closure strip having its inner surface coated with polyethylene is bonded to both of the wall sections by application of suitable heat and pressure. The polyethylene coating on the inner surface of the closure strip is substantially thicker than the coating on the outer surfaces of the wall sections, hence the application of heat and pressure for bonding the coatings together also causes the coating of the closure strip to permeate much more deeply into the material of the closure strip and thereby become more securely bonded to the closure strip than the coatings of the wall sections are bonded to the wall sections. A pull tab on the closure strip is used to pull the strip, resulting in tearing of the coatings from the wall sections, so that the wall sections are no longer joined together.

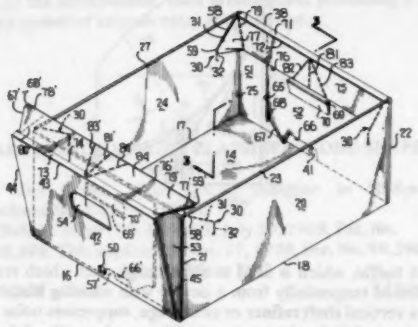
3,687,353
SIX CORNER COLLAPSIBLE CARTON
J. Leslie Prystup, Madison, and William E. McNair, Clinton, both of Miss., assignors to Consolidated Packaging Corporation, Chicago, Ill.
Filed Sept. 8, 1970, Ser. No. 70,322
Int. Cl. B65d *5/36*
U.S. Cl. 229—33 **7 Claims**



A collapsible paperboard carton made from a single rectangular blank and having equal top and bottom panels spaced by

a back panel equal to the front panel and front flap on the top panel, each of which panels have end flaps which extend outwardly only slightly more than half the height of the back panel. These end flaps have six creased triangular corners which are glued to the adjacent flaps so that the end flaps of the front and back panels form corner posts for the set-up carton. The end flaps of the top panel may have spaced notches to form a tuck-in flap between them for locking over the top edge of the end flaps of the bottom panel when the carton is set up. The back panel may be apertured for ventilation purposes.

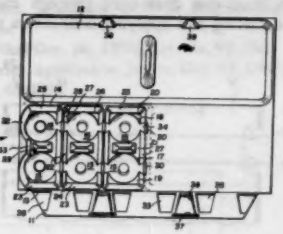
3,687,354
SELF-LOCKING POULTRY BOX
Charles W. Jennings, Rogers, Ark., assignor to Continental Can Company, Inc., New York, N.Y.
Filed May 10, 1971, Ser. No. 141,772
Int. Cl. B65d *5/22*
U.S. Cl. 229—34 **17 Claims**



This disclosure relates to a blank and a container or box formed therefrom particularly adapted for housing refrigerated (CO_2 or ice) poultry, the blank being constructed from corrugated board having inner, intermediate and outer plies, a plurality of fold lines setting off a bottom panel, end panels joined to the bottom panel, side panels joined to the bottom panel, a reinforcing panel between adjacent edges of adjoining side and end panels and being joined to each side panel by an associated fold line, a locking panel joined to each end panel, each locking panel having a terminal locking tab formed from material at least in part robbed from the reinforcing panels, and each locking tab having an angular locking edge adapted for engagement with an angular locking curshscore slit in the inner play of the side panels whereby in the set-up condition of the container the locking edges of each locking tab are in firm engagement with an associated locking slit.

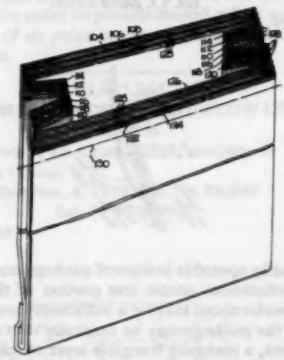
3,687,355
EGG CARTON
Kurg G. Dahlberg, Pittsford, N.Y., assignor to Thermo Trim Inc., Rochester, N.Y.
Filed Feb. 10, 1971, Ser. No. 114,231
Int. Cl. B65d *85/32*
U.S. Cl. 229—45 **14 Claims**

A molded egg carton has egg-shaped sockets in the bottom half of the base and bracing walls forming square chambers above the sockets in the upper half of the base. This makes the



base more rigid for better protection of the eggs and results in other advantages including more room for large eggs.

3,687,356
GUSSETED TYPE BAGS
John J. Goodrich, Pensacola, Fla., and Chester E. Waxlax, New City, N.Y., assignors to St. Regis Paper Company, New York, N.Y.
Filed June 28, 1965, Ser. No. 467,416
Int. Cl. B65d *31/02*
U.S. Cl. 229—55 **4 Claims**

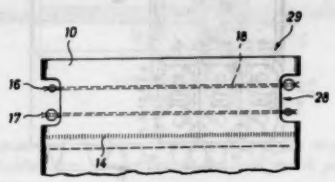


A bag of tubular form comprising a plurality of contiguous plies of flexible sheet material, said bag having a front surface and an oppositely disposed rear surface adapted to overlap said front surface at one end of said tube when said bag is in its assembled condition, said bag being longitudinally and reversely creased along diametrically opposed portions to provide a pair of oppositely disposed gussets interposed between said front and rear surfaces, each of said gussets having a front portion and a stepped rear portion adapted to overlap said front portion within the overlap area of said front and rear surfaces at said end of the tube when said bag is in its assembled condition, and with the bag plies extending progressively and successively one beyond another at each surface portion at said bag end, and a bonding agent in a dormant state being applied on each surface portion at said bag end, and said bonding agent being reactivatable to close said bag subsequent to a later bag filling operation.

3,687,357
DRAW-CORD BAGS
Gerhard Hansen, D7013 Oeffingen, Hofener Str. 47, Kreis Waiblingen, Germany
Filed April 30, 1970, Ser. No. 33,279
Int. Cl. B65d *33/28*
U.S. Cl. 229—63 **5 Claims**

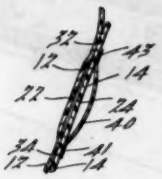
A method and apparatus for producing draw-cord bags wherein a folded sheet of synthetic material is fed step-wise

through an apparatus comprising means for folding the open edges of the sheet back upon themselves and producing a pair of seams, means for punching apertures therein, means for threading at least one draw-cord through each seam and means for producing and applying connectors to the ends of



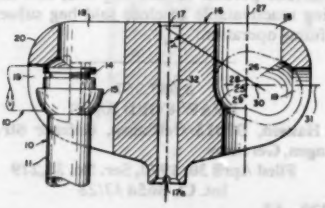
said draw-cords to produce an annular draw-cord, further means being provided for producing welded side edges for said bags and separating same from said sheet. The invention also relates to a draw-cord bag produced by the method and apparatus.

3,687,358
MANUALLY OPENABLE LEAKPROOF PACKAGE CONSTRUCTION
Anton Wink, Detroit, and Robert J. Williams, Birmingham, both of Mich., assignors to Cadillac Products Inc.
Filed May 27, 1971, Ser. No. 147,402
Int. Cl. B65d *33/00*
U.S. Cl. 229—66 **11 Claims**



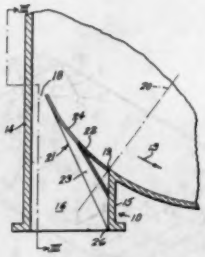
A manually openable leakproof package construction comprising perforations across one portion of the construction with the perforations leaving a sufficiently weakened portion such that the package may be manually torn open across the perforations, a manually frangible layer of leakproof material such as plastic overlying said perforations, and with the leakproof layer acting to seal off the perforated portion such that the package is leakproof prior to the time the package is manually torn open.

3,687,359
CENTRIFUGE ROTOR
Michael J. Scanlon, Westwood, Mass., assignor to Damon Corporation, Needham Heights, Mass.
Filed Jan. 7, 1971, Ser. No. 104,599
Int. Cl. B04b *9/12*
U.S. Cl. 233—26 **4 Claims**



A centrifuge rotor having a plurality of chambers each comprising (1) a socket extending through the top surface of the rotor having an inside cylindrical surface terminating in a spherical surface, (2) a slot extending through the peripheral and bottom surfaces of the rotor that is formed by a cylindrical section extending through an arc of 90° with a center along the vertical axis of the socket and below the center of the socket spherical section and (3) a spherical seat connecting the slot and the socket having its center along the horizontal axis of the slot so that the angle between the vertical axis of the rotor and a line between the center of the spherical socket section and the seat is between 55° and 90°. Buckets adapted to fit into the chambers and move between a vertical and horizontal position comprise a top spherical flanged section and a bottom tubular section.

3,687,360
NOISE SUPPRESSING BAFFLE DISCHARGE EXIT
Stanley R. Prew, Hinsdale, and Llewelyn E. Clark, Pittsfield, both of Mass., assignors to Beloit Corporation, Beloit, Wis.
Filed Nov. 19, 1969, Ser. No. 877,888
Int. Cl. B04b *11/00*
U.S. Cl. 233—46 **5 Claims**

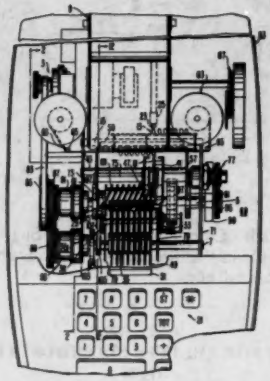


A baffle, which is used in a discharge duct which removes material tangentially from a device with rotating blades such as a vertical shaft refiner or centrifuge, suppresses noise of the device and limits the product buildup on the walls of the duct. The baffle has a portion blocking part of the opening between the device and the duct with a second portion extending along the duct providing a change in the cross-section of the duct adjacent the opening. Due to the change in the cross-section caused by the baffle, material being discharged into the duct expands with a corresponding decrease in its velocity of travel to eliminate or reduce the tendency of the material to stick to the side wall of the duct to cause a product buildup.

3,687,361
LOW COST CALCULATOR PROVIDING SERIAL PRINTING AND A BI-QUINARY SYSTEM FOR AMOUNT ENTRY
Walter Griffin Paige, Pasadena, Calif., assignor to Burroughs Corporation, Detroit, Mich.
Filed May 5, 1971, Ser. No. 140,373
Int. Cl. G06c *11/04*; B4j *5/08*
U.S. Cl. 235—60 P **28 Claims**

A ten-key printing calculator having a pin carriage and a plurality of ordinally arranged accumulator wheels utilizes a single print hammer, a single printing element, and a single accumulator actuator for serially printing and accumulating keyboard-entered amounts, and for serially reading and printing stored amounts, the single printing element and accumulator actuator being combined in a traversing carrier that translatably cooperates with the preset pin carriage for printing keyboard-entered amounts, and with the plurality of accumulator wheels to both accumulate keyboard-entered amounts and to read and print amounts stored in the accumulator. The traversing carrier is provided with a pair of differentially

geared indexing slides responsive to the preset position of five pins arranged in each column of the pin carriage, and to the



preset positioning of five limit stops associated with each order of the accumulator, such arrangement presenting a bi-quinary system of amount entry and read-out.

3,687,362

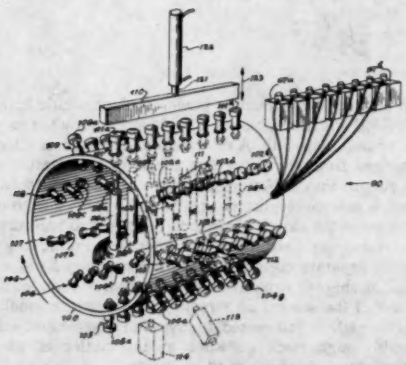
APPARATUS FOR WEIGHT CLASSIFYING ODD SHAPED ARTICLES

Victor Del Rosso, Ithaca, N.Y., assignor to Hi-Speed Checkweigher Co., Inc., Ithaca, N.Y.

Division of Ser. No. 840,669, July 10, 1969, Pat. No. 3,640,384. This application Nov. 17, 1970, Ser. No. 90,390

Int. Cl. G06m 7/00

U.S. Cl. 235—98 R 5 Claims



An apparatus for weight classifying odd shaped articles, wherein a plurality of open topped carrier buckets having hinged bottoms adapted when closed to support articles thereon are continuously passed sequentially through a filling station at which articles are positioned in the buckets, a weighing station at which the articles are weighed, and a discharge classifying station at which the bottom of each bucket is opened to discharge an article into one of a plurality of article takeoff conveyors on the basis of its previously recorded weight.

3,687,363

DIGITAL-ANALOGUE CONVERTER

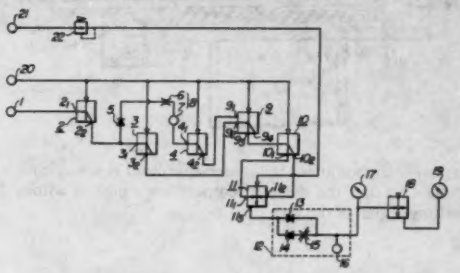
Hideo Numata, Kawasaki, and Kazuyuki Nakahara, Tokyo, both of Japan, assignors to Oval Engineering Co., Ltd., Tokyo, Japan

Filed Dec. 16, 1970, Ser. No. 98,556

Claims priority, application Japan, Dec. 18, 1969, 44/101545; Sept. 26, 1970, 45/8395

Int. Cl. H03k 13/02

U.S. Cl. 235—200 9 Claims



A digital-analogue converter comprising fluid operated elements in which a pneumatic input pulse signal is connected to a pneumatic pulse shaping circuit to limit the width and the peak value of the pulse to predetermined values and in which a means value of air pressure can be obtained through an integrating circuit.

3,687,364

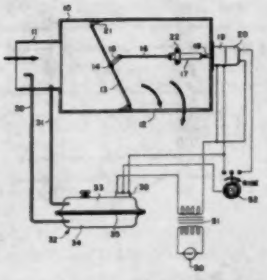
AIR DISTRIBUTION SYSTEM WITH FLOW LIMITING DEVICE

John C. McNabney, La Crosse, Wis., assignor to The Trane Company, La Crosse, Wis.

Filed Nov. 4, 1970, Ser. No. 86,661

Int. Cl. F24f 7/06

U.S. Cl. 236—49 12 Claims



An apparatus and method for limiting the flow in a variable air volume distribution system in which a sensed differential pressure provides a signal to increase or decrease air flow.

3,687,365

THERMOSTATIC FLOW CONTROLLER

Rudolf Reinhold Laessig, Sunneytown, Pa., assignor to General Electric Company

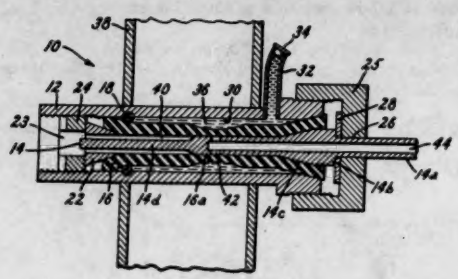
Filed Sept. 10, 1970, Ser. No. 71,026

Int. Cl. G05d 23/02

U.S. Cl. 236—99 5 Claims

A fluid control device responsive to a sensed temperature wherein a material having a known coefficient of thermal expansion fills a chamber defined in part by a flexible diaphragm such that a change in temperature within a desired temperature range causes a proportional change in volume of the

material to cause a change in cross-sectional area of a flow path which is defined at least in part by the diaphragm. In the



preferred embodiment the material utilized is a wax which is chosen so that the desired temperature range is within the melting region of the wax.

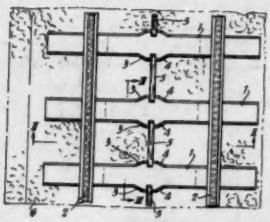
ERRATUM

For Class 238—25 see:
Patent No. 3,687,346

3,687,366
RAILWAY TRACK

Archibald Paterson, London, England, assignor to British Railways Board, London, England

Filed July 20, 1970, Ser. No. 56,375
Int. Cl. E01b 3/48
U.S. Cl. 238—105 2 Claims



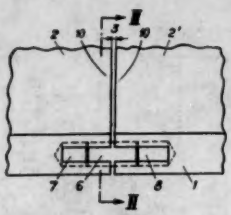
A railway track of the kind in which the rails are supported on sleepers embedded in ballast, wherein adjacent sleepers of the track are interconnected preferably at their mid-lengths by a member such a plank or board extending longitudinally of the track and into the ballast of the track to assist in resisting movement of the sleepers laterally of the track.

3,687,367
RAIL CONNECTION FOR OVERHEAD CONVEYORS

Eugene Schurch, and Rolf Storrer, both of Gerlafingen, Switzerland, assignors to Von Roll AG, Gerlafingen, Switzerland

Filed May 8, 1970, Ser. No. 35,718
Claims priority, application Switzerland, May 16, 1969, 7510/69
Int. Cl. E01b 11/00
U.S. Cl. 238—151 3 Claims

A rail connection for overhead or suspended conveyors or the like in which the rail ends are connected with one another by connection means. According to the invention, the connection means comprises at least one centering bolt member ar-

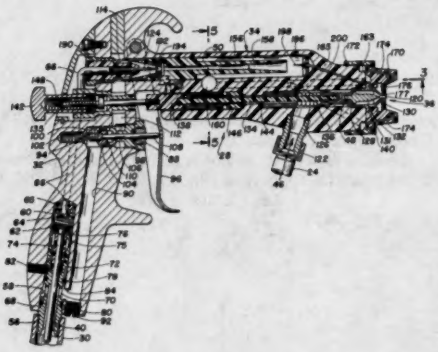


ranged at the rails of a rail joint, this centering bolt member being displaceable in the direction of the rails and serving to interconnect both rail ends.

3,687,368
VALVE UNIT FOR AIR TYPE ELECTROSTATIC SPRAY GUN

John D. Geberth, Jr., West Paterson, N.J., assignor to Electrogasdynamics, Inc., Hanover, N.J.

Filed April 19, 1971, Ser. No. 135,159
Int. Cl. B05b 5/00
U.S. Cl. 239—15 4 Claims



An electrogasdynamically powered electrostatic spray gun is provided which discharges a liquid stream toward an object to be coated therewith. A first seeded air stream is selectively discharged from the spray gun to effect atomization of the fluid stream into a circular pattern and a second seeded air stream is selectively discharged from the spray gun to modify the shape of the atomized stream. The first and second seeded air streams are fed to their respective discharging zones through separate conduits which are supplied from a single feed. The shaping stream of seeded air can be reduced and the portion of the seeded air stream which would normally flow therethrough is redirected to bypass same whereby an undesirably high back pressure at the outlet of the electrogasdynamic generator will be avoided.

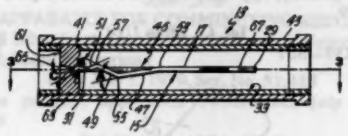
3,687,369
CLEANING APPARATUS

Cyril Patrick Johnstone, Morin Heights, Quebec, Canada, assignor to North American Car Corporation, Chicago, Ill.

Filed Oct. 12, 1970, Ser. No. 79,878
Int. Cl. B05b 3/14
U.S. Cl. 239—102 11 Claims

An improved cleaning apparatus comprising means for mechanically imparting high frequency pulses to washing fluid directed, at high pressure, through a conduit against a surface

to be cleaned. The pulses are imparted to the fluid by directing the fluid through an orifice within the conduit toward a reed



loosely mounted intermediate its ends within the conduit. The reed has configuration to cause it to vibrate when the fluid is directed at it.

3,687,370

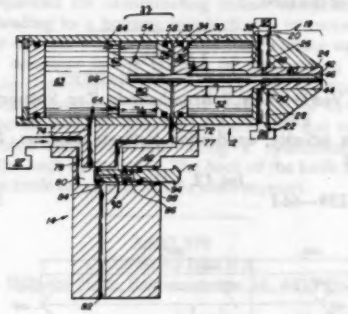
LIQUID MIXING AND DISPENSING APPARATUS

Charles R. Sperry, Providence, R.I., assignor to Instapak Corporation, Darien, Conn.

Filed Jan. 18, 1971, Ser. No. 107,023

Int. Cl. B05b *15/02*

U.S. Cl. 239—112 **10 Claims**



An apparatus for mixing and spraying or dispensing two liquids, such as liquid organic resins and polyisocyanates which react to form a polyurethane foam. The apparatus comprises a gun and related equipment and includes a reciprocally mounted valving rod in the gun which during its movement is bathed in a third liquid which assures the easy movement of the rod. In the case of the organic resin and polyisocyanates, the third liquid which is known as "cellosolve" solvent prevents the reaction of the reagents thereby preventing the formation of polyurethane foam within the dispensing apparatus which formation would inhibit the movement of the valving rod. The valving rod is such that the free end thereof controls the on/off flow of the two liquids into a mixing chamber.

3,687,371

MOBILE SPRAY PAINTING MACHINE

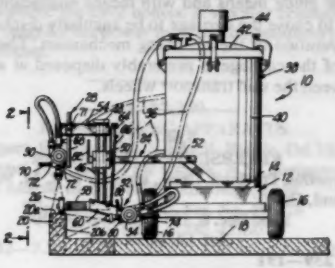
Carl J. Swager, 1173 Elna, Ontario, Calif.

Filed Sept. 21, 1970, Ser. No. 73,793

Int. Cl. B05c *5/00*

U.S. Cl. 239—150 **7 Claims**

A mobile spray painting machine having a vehicle movable along a raised shoulder, such as a curb, a carriage located laterally outboard of and movable vertically relative to the vehicle, a roller or the like on the carriage which rides along the top face of the shoulder to maintain the carriage at a fixed elevation relative to the shoulder, and paint spray heads on the carriage which receive paint under pressure from a supply on



the vehicle and are oriented to spray paint the top and side shoulder faces as the vehicle moves along the shoulder.

3,687,372

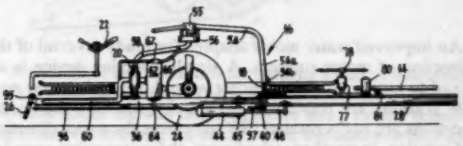
APPARATUS FOR IRRIGATING LAND

Neville Peter Badcock, Private Bag 68, Latrobe, 7307, Lornebrook, Australia

Filed June 17, 1971, Ser. No. 153,996

Int. Cl. B05b *3/00*

U.S. Cl. 239—183 **19 Claims**



The invention provides irrigating apparatus comprising a self-propelled wheeled carriage which is connected to a fixed hydrant by a hose through which water is supplied to spray means, on the carriage, which is also provided with a turntable or reel for winding and unwinding the hose.

The carriage is adapted to travel outwards from the hydrant in a substantially radial path during which the hose is paid out and laid on the ground behind it. Means are provided for reversing the carriage as it is moving outwards whereby it then returns to the hydrant along the line of the hose which is progressively rewound on the carriage. Reversal of the carriage as it travels outwards is effected either by its contact with an obstacle in its path or by the operation of means on the carriage which sense its distance from the hydrant.

When the carriage returns to and engages the hydrant, it is angularly displaced, after which its motion is again reversed so that it moves outwardly again in a travel path which is angularly displaced from its previous path. These operations may be repeated until the entire area surrounding the hydrant is irrigated and may continue indefinitely until the water is turned off.

The extent of the angular displacement of the carriage when it returns to the hydrant, may be determined by associated escapement means, or otherwise, and such angular displacements are not necessarily uniform but may depend on the shape of the area to be watered.

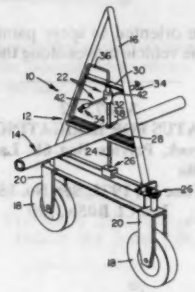
Provision is made for progressively reducing the speed of the carriage as it moves outwardly and or inwardly so that the ground is uniformly watered.

The carriage is driven inwardly and outwardly by a suitable motor thereon. A hydraulic motor is preferably used for this purpose in which case the discharge from the motor is directed to said spray means.

The carriage preferably has a horizontal turntable for winding and unwinding the hose, two laterally spaced driven transport wheels to which motion is transmitted through reversing

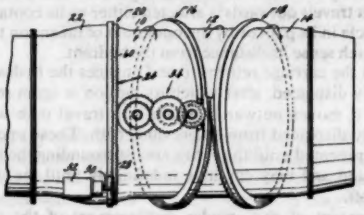
and differential gearing, and an elongated substantially counterbalanced inward extension. This extension is provided with hose guide means and with means engageable with the hydrant to cause the carriage to be angularly displaced and to effect operation of the reversing mechanism. The center of gravity of the carriage is preferably disposed at a low level and between the said transport wheels.

3,687,373
REVERSING WATER MOTOR
Gail Cornelius, Portland, Oreg., assignor to R. M. Wade & Co., Portland, Oreg.
Filed Dec. 8, 1970, Ser. No. 96,008
Int. Cl. B05b *3/18*
U.S. Cl. 239—191 **7 Claims**



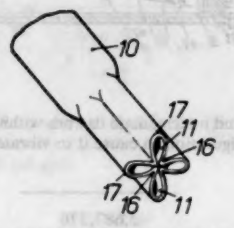
An improved water motor adapted for ready reversal of the direction of motor rotation. A simple coupling device is affixed to outer ends of the motor water arms and curved nozzle portions are rotatably held therein, whereby the nozzle portions are easily rotated 180° to reverse the motor direction of rotation. In another embodiment, the motor water arms are interlocked or continuous, whereby rotation of one arm to the reversing position automatically rotates the diametric arm to its reversing position.

3,687,374
SWIVELABLE JET NOZZLE
Dudley O. Nash, Cincinnati, Ohio, assignor to General Electric Company
Filed July 2, 1970, Ser. No. 51,779
Int. Cl. B64c *15/04*
U.S. Cl. 239—265.35 **6 Claims**



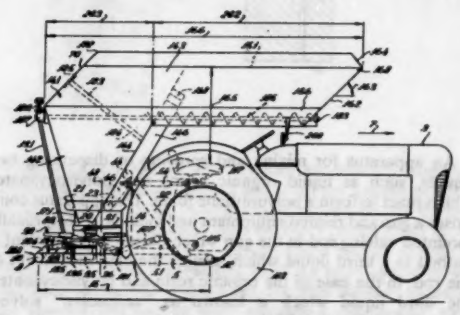
A uniplanar swivelable jet exhaust nozzle having duct sections which are serially and rotatably connected in planes oblique to their longitudinal axes. The first duct section is rotatably connected to support structure and peripherally carries a speed reduction train. The first gear of the train engages a motor driven ring gear extending around and carried by the first duct, and the last gear of the train engages a ring gear carried by the second duct section to impart torque thereto. A first gear of a synchronizing gear train, peripherally carried by the first duct, engages the second duct ring gear and a last gear of that train engages a ring gear fixedly carried by the support structure. Suitable connecting means are provided to drive the remaining duct sections.

3,687,375
FUEL INJECTION APPARATUS FOR INTERNAL COMBUSTION ENGINES
Kenneth Griffiths, 100 Hall Lane, Walsall, England
Filed Sept. 29, 1970, Ser. No. 76,581
Claims priority, application Great Britain, Sept. 30, 1969, 47,884/69
Int. Cl. B05b *1/14*
U.S. Cl. 239—557 **8 Claims**



A multi-outlet fuel injection nozzle is formed from metal tube which at one end is inwardly-deformed so that portions of the wall of the tube are compressed together and divide the interior of the end of the tube into two or more passages which extend longitudinally of the tube and form tubular injection outlets of the nozzle each having a cross-section which tapers laterally of the tube.

3,687,376
FERTILIZER SPREADERS
Cornelis Van Der Lely, 7, Bruschenrain, Zug, Switzerland
Filed Nov. 17, 1970, Ser. No. 90,274
Claims priority, application Netherlands, Nov. 24, 1969, 6917642
Int. Cl. A01c *17/00*
U.S. Cl. 239—661 **31 Claims**



A spreader implement with a hopper of extra large capacity has a frame that can be attached to the three point lift of a tractor. The hopper has a lower vertical portion, with a rotary spreader disc mounted below an outlet in the hopper bottom, and an upwardly extending horizontal portion that can have an extension for additional capacity. The upper portion extends over the tractor seat and is proportionately wide. Conveyors can be mounted within the upper portion to move material back to the vertical portion. An eccentric connects the conveyors and the drive which also powers the spreader disc. The hopper is multisided with the walls angled relative to one another and the center of gravity located adjacent the three point connection. Also, the upper portion can be divided into two compartments, each with a worm conveyor. The frame includes inter-connected beams with a lower beam support for resting the implement on the ground during non-use.

3,687,377

Patent Not Issued For This Number

3,687,378

APPARATUS FOR COMMINUTING REFUSE

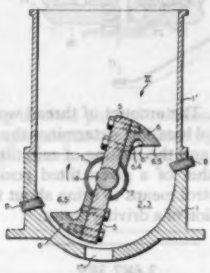
Luitpold Schweigert, Osnabruck, Germany, assignor to Bruno Vogel, Basel, Switzerland

Filed July 1, 1970, Ser. No. 51,415

Claims priority, application Switzerland, July 4, 1969, 10293/69

Int. Cl. B02c *18/06, 18/40*

U.S. Cl. 241—142 8 Claims



An apparatus for comminuting refuse comprises a feed hopper leading to a housing in which one or more rotating knives co-operate with one or more fixed cutting strips. One or more openings in the bottom of the housing serve to remove the comminuted refuse formed. Each rotating knife is characterized by one or more tips which lies or lie forward, i.e., in the direction of rotation of the knife, and by cutting edges which run backwards along a cylindrical surface towards the back of the knife. The back of the knife is used to mount the knife on an axle using a knife support.

3,687,379

CRUSHING DEVICE

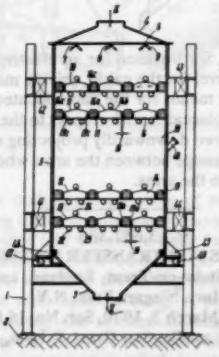
Friedrich Wilhelm Nette, Sachsenstrasse 16, 4033 Hosel, Germany

Filed May 22, 1970, Ser. No. 39,825

Claims priority, application Germany, May 24, 1969, P 19 26 615.0

Int. Cl. B02c *1/00*

U.S. Cl. 241—147 24 Claims



A crushing device in the form of a container having an upper inlet and a lower outlet and a plurality of crushing zones in vertically distributed relation therebetween. Each crushing zone has horizontal anvil bodies fixed to the container in spaced parallel relation while between the anvil bodies, and in the same horizontal plane, are rows of hammers guided for movement in the horizontal direction for beating against the adjacent sides of the anvil bodies. A vibrator connected to the container supplies the power to move the hammers relative to the anvil bodies.

3,687,380

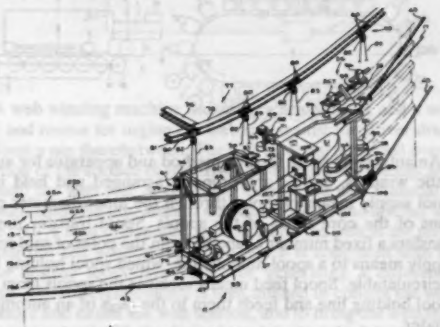
PRESTRESSING APPARATUS

Leroy Magers, Setauket, N.Y.; John H. Riddle, Del Mar, Calif., and August D. Eitzen, Ville Centre, N.Y., assignors to Gulf General Atomic Incorporated, San Diego, Calif.

Filed June 25, 1970, Ser. No. 49,628

Int. Cl. B21f *17/00, 45/00*

U.S. Cl. 242—7.21 27 Claims



A method of and apparatus for banding a wall of a structure with a tensioned tendon. The apparatus comprises a carriage movable about the wall of the structure and a tendon tensioning means for stressing the tendon while the tendon is held and moved along a substantially straight line path of movement aligned with a tangent to a point at which the tendon is banded on the structural wall.

3,687,381

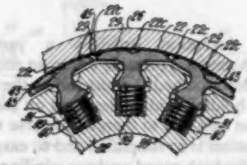
METHOD FOR PACKAGING GLASS STRANDS

Cecil R. Cunningham, and James C. Rushton, both of Aiken, S.C., assignors to Owens-Corning Fiberglas Corporation

Division of Ser. No. 711,776, March 8, 1969, Pat. No. 3,544,016. This application Jan. 29, 1970, Ser. No. 12,531

Int. Cl. B65h *54/02*

U.S. Cl. 242—18 R 7 Claims



A rotatable mandrel for holding a tube on which a glass strand is wound into a package which has elongated fingers extending lengthwise of the mandrel in closely adjoining relation, said fingers being loosely held for outward movement under the centrifugal force of the rotation of the mandrel whereby the tube is held to its greatest diameter, each of said fingers having a groove along its longitudinal center line and tapered edges whereby on termination of the rotating movement of the mandrel and of the associated application of centrifugal force against the tube, the tube is constricted by the tension of the wound strand thereon and to effect an accommodating reduction in diameter, portions of the tube collapse and enter into the depressed areas of the center grooves and tapered edges of the fingers.

3,687,382

AUTOMATIC SPOOL FEEDING METHOD AND APPARATUS FOR AUTOMATIC WINDING MACHINE

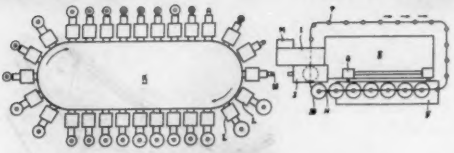
Isamu Matsui; Isao Nagasawa, both of Kyoto; Tatsuo Horiuchi, Hirakata; Hiroshi Uchida, and Masao Uehara, both of Kyoto, all of Japan, assignors to Daiwa Kaisha Boseki Kabushiki, Kyoto and Murata Kaisha Kikai Kabushiki, Osaka, Japan

Filed Oct. 5, 1970, Ser. No. 77,991

Claims priority, application Japan, Oct. 11, 1969, 44/81362; Oct. 11, 1969, 44/81363; Oct. 11, 1969, 44/81364

Int. Cl. B65h *54/24*

U.S. Cl. 242—35.5 R 5 Claims



An automatic spool feeding method and apparatus for automatic winders. Spools are properly arranged and held in a spool supply means on poles through the inner diameter portions of the core tubes of the spools. Spool transfer means transfers a fixed number of spools from the poles of said spool supply means to a spool holding line, which spool holding line is circulatable. Spool feed means receives the spools from the spool holding line and feeds them to the pegs of an automatic winder.

3,687,383

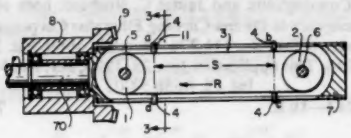
YARN TRAVERSING MECHANISM

Satoshi Ishihara, Iwakuni, Japan, assignor to Teijin Seiki Co., Ltd., Osaka, Japan

Filed June 2, 1970, Ser. No. 42,720

Int. Cl. B65h *54/28*

U.S. Cl. 242—43 2 Claims



The present invention provides a yarn traversing mechanism which makes it possible to run an endless belt with several yarn guides attached thereto and at the same time to rotate a support holding said endless belt on the longitudinal axis of the endless belt and to thereby traverse the yarn. This traversing mechanism is so simplified and so easy of operation that it is suitable for high-speed package winding.

3,687,384

THREAD DELIVERY AND STORAGE DEVICE

Karl Isac Joel Rosen, Villa Haga, Ulricehamn, Sweden

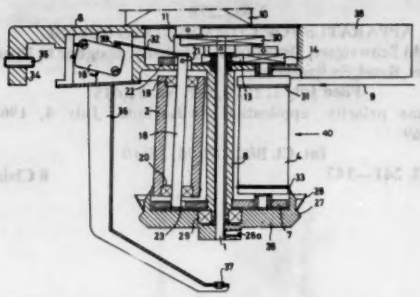
Filed April 9, 1970, Ser. No. 26,913

Claims priority, application Sweden, April 11, 1969, 5107/69; Germany, Jan. 9, 1970, P 20 00 840.6

Int. Cl. B65h *51/26*

U.S. Cl. 242—47.12 12 Claims

A thread delivery and, if necessary, storage device, preferably for textile machines and particularly for elastic threads to be used therewith. A coil member is provided to which a thread is continuously fed, moved axially, and then continuously removed tangentially. Rollers are arranged around the shaft of the coil member, each of said rollers being rotatable around its own axis and one thereof being driven. The axis of one of the rollers is pivotally mounted and normally slightly tilted, relative to the axis of the coil member both to effect the axial movement of the thread and to effect



the desired control. The amount of thread wound on the coil member, and its axial location, determines the pivotal position of the tilted roller, and the passing of said tilted roller in one direction or the other of a given tilted position operates a switch or other control means to bring about the desired control over the operation of a driving motor.

3,687,385

WINDING DEVICE FOR A CABLE, ROPE OR THE LIKE

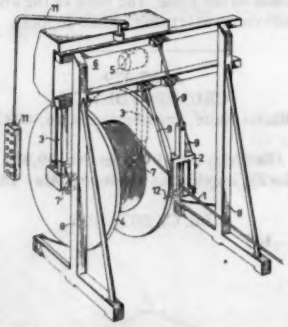
Oystein Gunnar Skalleberg, Jakobsberg, Sweden, assignor to Mekanomatik AB, Vallingby, Sweden

Filed Dec. 15, 1969, Ser. No. 884,898

Claims priority, application Sweden, Dec. 16, 1968, 17212/68

Int. Cl. B65h *75/34, 57/28;* H02g *11/02*

U.S. Cl. 242—54 R 6 Claims



Winding device, for instance for an electric cable, consisting of a storing barrel for the cable, driving machinery for the barrel and guiding means for the cable located on a traverser arranged to be displaceable with respect to the axle of the barrel and resting on two downwardly projecting supporting arms admitting a free passage between the arms when the barrel has been removed from the arms.

3,687,386

CONTAINERS FOR TRANSFER MATERIAL WEBS

Peter Sandbach, Stoke-on-Trent, England, assignor to Moore Business Forms Inc., Niagara Falls, N.Y.

Filed March 3, 1970, Ser. No. 16,011

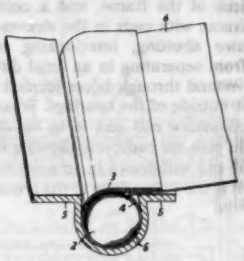
Claims priority, application Great Britain, March 4, 1969, 11,537/69

Int. Cl. B65h *75/02;* B41j *17/24*

U.S. Cl. 242—55 2 Claims

For the especial use in supplying and supporting a web of transfer paper for transverse feed across the record webs of an

autographic register, an extruded thermo-plastic hollow cylinder is provided for holding a roll of transfer paper, the wall of the cylinder being interrupted and terminating in two



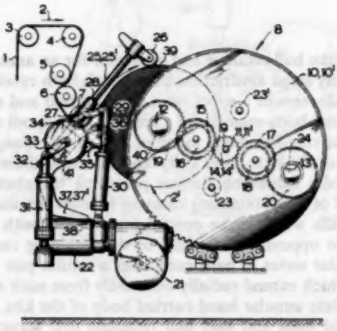
flanges extending in close parallel relation tangentially of the cylinder, the flanges adapted to resiliently grip the web as it issues from the cylinder to restrain the web from creeping and buckling.

3,687,387

APPARATUS FOR COILING MOVING WEBS OF PAPER, PLASTICS FILM OR OTHER SHEET MATERIALS

Willi Hilgemann, Lengerich, Germany, assignor to Windmoller & Holscher, Lengerich of Westphalia, Germany

Filed April 15, 1970, Ser. No. 28,680
Claims priority, application Germany, April 22, 1969, P 19 20 445.6
Int. Cl. B65h *19/20, 35/02*
U.S. Cl. 242—56 A 4 Claims



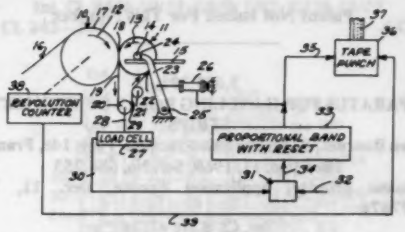
Apparatus for coiling moving webs of material wherein at least two winding mandrels alternately movable from a coiling station are provided and wherein a knife for severing the web between a completed coil moved out of the coiling station and an empty mandrel moved to the coiling station is positioned to be withdrawable after such severing. A pressure roll is also provided for pressing the severed leading end of the web against the empty mandrel, the pressure roll being withdrawable during the movement of mandrels to and from the coiling station and wherein the knife and pressure roll are independently operable so that, after withdrawal of the knife, the pressure roll remains applied to the web being wound at the coiling station.

3,687,388

MEASURING AND CONTROLLING WOUND-IN TENSION FOR WEB WINDING MACHINES

John D. Pfeiffer, Downingtown, Pa., assignor to Beloit Corporation, Downingtown, Pa.

Filed Dec. 12, 1969, Ser. No. 884,519
Int. Cl. B65h *17/08, 17/12*
U.S. Cl. 242—65 9 Claims



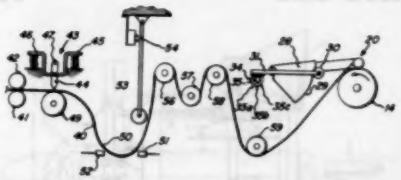
A web winding machine including a driver drum and a web roll and means for urging the web roll against the driver drum to form a nip therebetween. The web material is carried over a portion of the surface of the driver drum, between the nip, and around the web roll. A complete loop of the web material is formed from the nip, around a measuring roll, and around the web roll. A load cell senses the tension on the web at the measuring roll and generates a signal which is compared with an ideal desired tensioning signal for generating a difference signal. The difference signal is then utilized to control the web pressure and hence the web tension, and to bring the web tension into accord with the desired tension. An initial slow run of the web is provided with the adjusted nip pressure being recorded on a chart as a function of the instantaneous diameter of the web roll. The chart or program thus produced is then used at high speeds in subsequent winding operations to directly control the nip pressure and hence the web tension.

3,687,389

RE-WIND MECHANISM WITH PROFILED CAM-POTENTIOMETER

Richard Calvin Adams, West Barrington, R.I., assignor to G. T. Schjeldahl Company, Northfield, Minn.

Filed Sept. 29, 1970, Ser. No. 76,476
Int. Cl. B65h *25/04, 25/32*
U.S. Cl. 242—67.5 5 Claims



A system for re-winding an elongated moving treating web onto a winding core downstream from a web treating station, the system including web handling means for establishing and maintaining a slack segment in the web downstream from the treating station, and take-up roll means for re-winding the treated web onto the winding core at a substantially constant rate of speed, the rate substantially matching the rate of movement of the web through the treating station. Means are provided for applying tension to the web between the slack loop segment and the winding core. The take-up roll includes a motor means for rotating the winding core and control means for driving the motor means at a certain predetermined arcuate rate responsive to the immediate composite diameter of

the core and its wound web. Sensing arm means are arranged for sensing the diameter of the core and its re-wound web portion, the arm means being provided with a profiled cam having its cam surface arranged to provide motion in a cam follower proportional to the reciprocal of the immediate composite diameter of the winding core and the re-wound web.

3,687,390

Patent Not Issued For This Number

3,687,391

APPARATUS FOR HANDLING ROLLS OF THIN METAL STRIPS

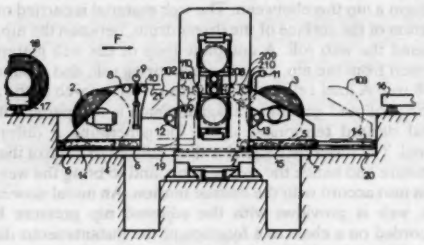
Lucien Bournez, 52 bis rue Saint-Jacques, Paris 14e, France

Filed Dec. 11, 1969, Ser. No. 884,253

Claims priority, application France, Dec. 11, 1968, 68177676

Int. Cl. B21c *47/24*

U.S. Cl. 242—79 **7 Claims**



Device in which sheet unwinding and winding reels can be moved on either side of the rolling mill in order to keep a certain space in which the sheet can conveniently be handled at the feed-in and feed-out ends of the machine.

3,687,392

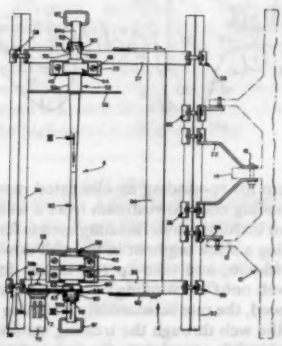
FARM MACHINE FOR REMOVING PROTECTIVE GROUND COVERS FROM A CULTIVATED FIELD

John R. Parry, Cinnaminson, N.J., assignor to Campbell Soup Company, Camden, N.J.

Filed May 4, 1970, Ser. No. 34,410

Int. Cl. B65h *75/40*

U.S. Cl. 242—86.5 R **8 Claims**



A farm machine for removing protective ground covers in the form of long strips of generally uniform width from the surface of a cultivated field. The machine includes a frame carried across the field above a cover and a driven spool mounted transversely on the frame to progressively wind the cover into a roll as the machine advances. The spool is composed of a pair of generally vertical flanges opposingly mounted within the frame, the flanges being attached to the ends of a pair of cylindrical sleeves mounted in bearings on opposing sides of the frame, and a center shaft extending across the frame with ends in the sleeves. The shaft is composed of two abutting, interlocking sections which are prevented from separating in an axial direction by a pair of pins which extend through bores formed in each sleeve and shaft section outside of the bearings. When a single cover has been formed into a roll and is to be discharged from the machine, the pins are removed allowing the shaft sections to be separated and withdrawn in an axial direction through the sleeves causing the roll to drop to the ground.

3,687,393

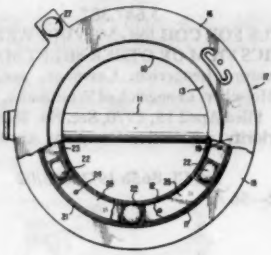
ANTIFRICTION BALL RETAINER AND SPACER

Henry Allen Wilson, 70 Park Ave., New York, N.Y.

Filed Aug. 19, 1970, Ser. No. 65,000

Int. Cl. B65h *75/40*

U.S. Cl. 242—96 **3 Claims**



A ring-like ball retainer and separator for an annular series of relatively large antifriction balls which both retain and antifrictionally mount a spool on a hand carried and supported intermediate body member of a kite reel. The spool comprises an annular ring-like body member having side flanges which extend radially both outwardly and inwardly therefrom and the inwardly extending flanges providing therebetween the outer half of a ball retaining raceway for said annular series of spaced balls which make central line contact with the spool body. The opposing inner half of the retaining raceway for said annular series of balls comprises a similar pair of spaced flanges which extend radially outwardly from each side of the intermediate annular hand carried body of the kite reels with which said balls and said ball retaining and separating ring make alternate central line contacts circumferentially thereof.

3,687,394

CORD CREEL

Alvin W. Neumeister, Tallmadge, Ohio, assignor to The Goodyear Tire & Rubber Company, Akron, Ohio

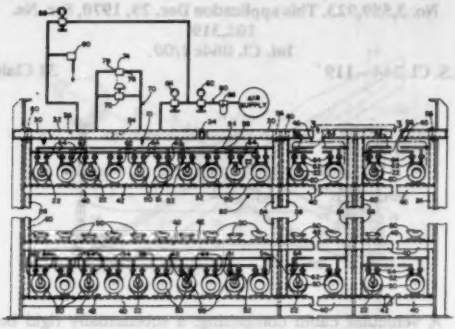
Filed June 9, 1971, Ser. No. 151,338

Int. Cl. B65h *49/02;* **D02h** *1/00;* **D03j** *5/08*

U.S. Cl. 242—131 **17 Claims**

A creel for supplying cords or wires to a calender, in which the tension in each individual cord is controlled by a pump-motor device capable of pumping an energy medium such as

air to a storage chamber while exerting a braking effort on the spool from which the cord is unwound and of rotationally



reversing to act as a motor driven by air from the chamber to rewind such cord if broken, or to retension the cord should it become slack.

3,687,395

MODE SWITCHING SYSTEM FOR MAGNETIC RECORDING-REPRODUCING APPARATUS

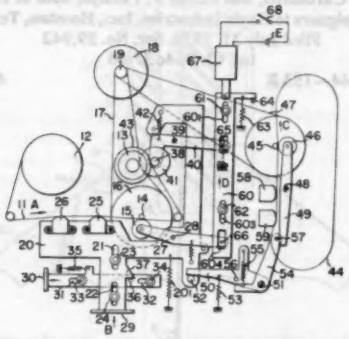
Takeshi Goshima, Tokyo; Shoji Ohta, Funabashi, and Nobuhiro Imai, Tokyo, all of Japan, assignors to Canon Kabushiki Kaisha, Tokyo, Japan

Filed Aug. 24, 1970, Ser. No. 66,421

Claims priority, application Japan, Aug. 27, 1969, 44/67311; Aug. 27, 1969, 44/67313

Int. Cl. G09b *19/04;* **G11b** *15/29*

U.S. Cl. 242—180 **12 Claims**



A magnetic recording-reproducing apparatus has a first magnetic tape with a long recording time and a second magnetic tape with a shorter recording time. The first tape is driven by a motor through a capstan connected to the motor and a pinch roller. The second tape is also driven at a predetermined speed. First drive means drives both of the first and second tapes simultaneously. Second drive means moves the pinch roller or capstan for the first tape away from the other. The pressure contact between the capstan and the pinch roller is released when the second drive means is actuated to stop the transportation of the first tape.

3,687,396

Patent Not Issued For This Number

3,687,397

TAPE CONTROL APPARATUS OF TAPE PROCESSING MACHINES

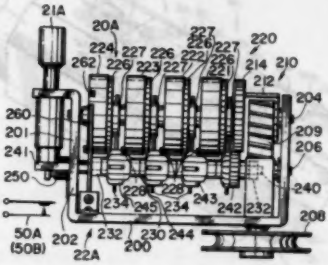
Akira Suzuki; Yoshiaki Esashi, both of Tokyo, and Tsunemoto Nakanishi, Ichikawa, all of Japan

Filed April 6, 1970, Ser. No. 25,800

Claims priority, application Japan, April 12, 1969, 44/28037

Int. Cl. B65h *59/38;* **G03b** *1/02;* **G11b** *15/13*

U.S. Cl. 242—191 **6 Claims**



Control apparatus for a tape processing machine comprises a first integrating counter resetable to zero and including a first switch contact operable when all digit wheels of the counter are shifted from 0 to 9, a second resetable counter including a second switch contact operable when all digit wheels of the second counter are shifted from 9 to 0 or vice versa, means to interlock the first and second counters with the running of the tape to memorize a predetermined position of the tape by the reset operation of the counters and a control circuit for the tape driving mechanism controlled by the first and second switch contact.

3,687,398

BALLISTIC MISSILE

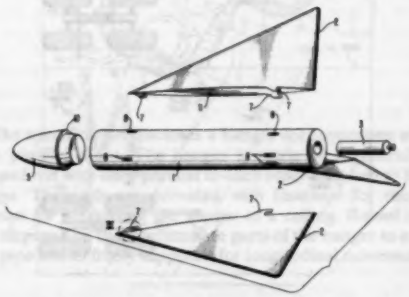
Helmut Beuschel, Steyerberg, Germany, assignor to Dynamit Nobel Aktiengesellschaft, Troisdorf, Germany

Filed Aug. 26, 1969, Ser. No. 853,090

Claims priority, application Germany, Sept. 11, 1968, P 17 28 214.3

Int. Cl. F42b *5/22, 9/20, 13/20*

U.S. Cl. 244—3.24 **13 Claims**

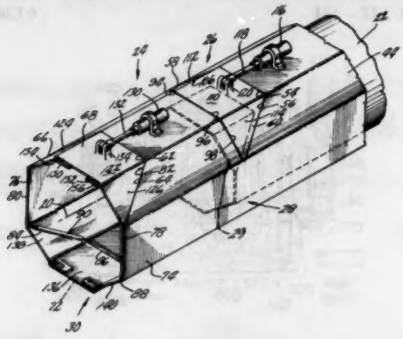


A ballistic missile, particularly constructed for use as a target unit, including a fuselage, a plurality of airfoils or stabilizers and a propulsion unit, readily assembled from a relatively few interchangeable component parts, and which is subjected to disassembly of the component parts upon frontal impact. In an assembled condition, the center of gravity of the missile is disposed in advance of the center of lift, when viewed in the direction of flight.

3,687,399
VARIABLE AREA EXHAUST NOZZLE

Julius W. Tumavicus, Old Saybrook, Conn., assignor to United Aircraft Corporation, East Hartford, Conn.

Division of Ser. No. 768,476, Oct. 17, 1968, Pat. No. 3,615,052. This application May 11, 1970, Ser. No. 48,719
Int. Cl. B64b 1/26; B64d 27/18
U.S. Cl. 244—55 6 Claims

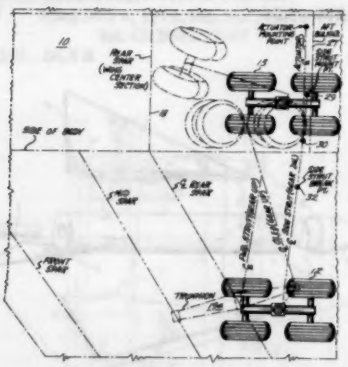


A variable area exhaust nozzle for a thrust generating engine which includes an exhaust duct member with fixed side walls and with a plurality of pivotable flaps attached thereto and cooperating therewith to define a high aspect ratio exhaust nozzle when the flaps are pivoted inwardly to their minimum area position and a low aspect ratio exhaust nozzle when the flaps are pivoted outwardly to their maximum area position.

3,687,400
METHOD AND APPARATUS FOR PROVIDING A RETRACTABLE MULTI-TRUCK INLINE LANDING GEAR FOR HEAVY AIRCRAFT

John M. Fitzgerald, Monroe, and Varnell L. James, Enumclaw, both of Wash., assignors to The Boeing Company, Seattle, Wash.

Filed Aug. 12, 1970, Ser. No. 36,387
Int. Cl. B64c 25/04, 25/34
U.S. Cl. 244—102 R 9 Claims

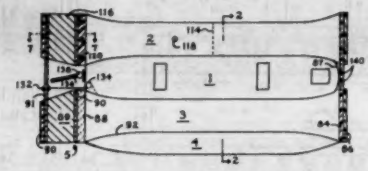


A retractable, main landing gear for aircraft weighing over a half million pounds comprises four trucks for four oleo struts or three trucks for three oleo struts, all trucks being on a transverse line, both when extended for loading up each oleo strut equally from the instant of touchdown, and when retracted for being positioned contiguous with each other for requiring the least amount of wheel well space. Further, all struts are mounted on trunnions secured to the rear and mid wing spars for providing a minimum of landing gear structural weight.

3,687,401
LIGHT-WEIGHT, WRECK-RESISTANT CABIN

Alvin Edward Moore, 916 Beach Blvd., Waveland, Miss.

Continuation-in-part of Ser. No. 822,199, May 6, 1969, Pat. No. 3,559,923. This application Dec. 29, 1970, Ser. No. 102,319
Int. Cl. B64c 1/00
U.S. Cl. 244—119 31 Claims

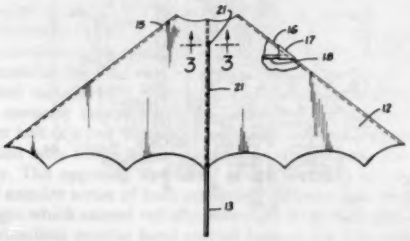


A vehicular cabin comprising: a substantially rigid body, endlessly arcuate in all cross sections in the form of Fig. 1 and in middle cross sections in the form of FIG. 12; and a shock-absorbing cushion around at least the bottom and a substantial portion of the sides of the body, comprising flexible foam plastic or yieldable fibers, and flexible, inflated tubes or balloons in the plastic or fibers. The wall of the rigid body includes: cans or tubes that are imbedded in substantially rigid foam plastic and optionally form part of stave-like elements whose bonded-together sides converge inwardly toward each other; mesh that tightly surrounds the foam plastic and cans; and stucco (containing plastic or portland cement) on the mesh. Balloon means, having a center of lift above the cabin's center of gravity, stabilize the vehicle against pitching and rolling. Inflated flexible tubes having tapered, flattened ends, of several uses in the cabin, are disclosed.

3,687,402
KITE

Julius M. Christoffel, and Lester F. Phillips, both of Houston, Tex., assignors to Gayla Industries, Inc., Houston, Tex.

Filed July 31, 1970, Ser. No. 59,942
Int. Cl. B64c 31/06
U.S. Cl. 244—153 R 4 Claims



This invention relates to an improved kite having a body of sheet material secured to supports and having a steadying and guiding keel attached to the body. The sheet material has one or more openings so that the keel may be attached partly to a support and partly to the sheet material, thereby making the keel less likely to tear away from the kite body.

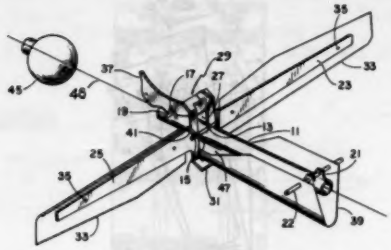
3,687,403
FLYABLE TOY ROTOR APPARATUS

Kenneth F. Guinn, 7313 Briley, Fort Worth, Tex.

Filed Aug. 10, 1970, Ser. No. 62,325
Int. Cl. B64c 31/06
U.S. Cl. 244—155 R 6 Claims

A flyable toy rotor apparatus with rotatable blades spring mounted to a shaft that receives a kite or balloon string.

Mounted to the shaft is a trigger mechanism which when cocked retains the rotor in a rotating climb position, but which when tripped against a pre-set stop pivots the rotor blades to a



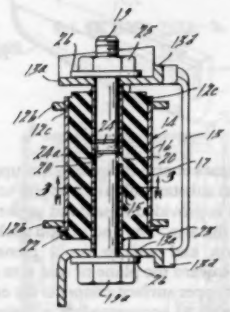
low drag position in which rotor rotation stops. Hence, the apparatus returns down the string. In one embodiment the actuation of the trigger releases cargo from a holder also attached to the shaft.

3,687,404

AUTOMOBILE ENGINE MOUNTING AND METHOD

Lawrence E. Werner, Grosse Pointe, Mich., assignor to Chrysler Corporation, Highland Park, Mich.

Filed Dec. 15, 1969, Ser. No. 884,857
Int. Cl. F16j *13/00*
U.S. Cl. 248—7 **11 Claims**



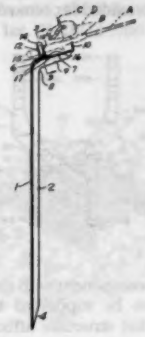
A resilient bushing assembly comprises inner and outer tubular members spaced by an elastic bushing under sufficient pressure to extrude a yieldable detent portion thereof through a radial opening in the inner member and into a detent receiving groove of a bolt located at a detent position within the inner member. The ends of the bolt extend axially beyond the bushing assembly to ride within a pair of guide slots in a corresponding pair of brackets and to seat in supported and predetermined located relationship at the slot bases. A bolt head and nut oversize with respect to the slots and spaced axially outwardly of the brackets at opposite ends of the bolt enable assembly of the bushing assembly and bolt at the detent position by movement of the bolt to its seated position through open ends of the slots whereupon the nut is tightened to draw the bolt from the detent position to clamp the bushing assembly between the brackets. Axial movement limiting flanges of the brackets overlie the bolt head and nut at the tightened position, but freely clear the flanges axially outwardly thereof during assembly when the bolt is at the detent position.

3,687,405

FISHING ROD HOLDER

James S. Cala, Keithwood Drive, R.D. #3, Valencia, Pa.

Filed July 14, 1970, Ser. No. 54,752
Int. Cl. A01k *97/10*
U.S. Cl. 248—44 **2 Claims**



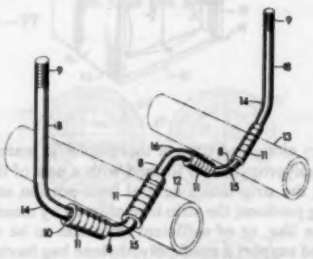
The fishing rod holder has a pointed end shaft having a medial side foot rest to assist in pushing said pointed end into the ground, a laterally extending L-shaped opposite end portion with a grooved free end and a clamp mounted on said laterally extending end portion whereby a fishing rod handle can be laid on said grooved free end and detachably retained by said clamp in order that the fishing rod will be held in a position extending from said groove free end when in use.

3,687,406

PIPE HANGER

Paul J. Krahe, 3015 Greengarden Boulevard, Erie, Pa., and Harry Gannon, 531 W. Gore Road, Erie, Pa.

Filed Aug. 3, 1970, Ser. No. 60,281
Int. Cl. F16l *3/16*
U.S. Cl. 248—55 **6 Claims**



The specification discloses a hanger for supporting at least two parallel pipes. The hanger is made of a generally W-shaped rod with ends parallel to each other attached to the W-shape. The ends are provided with fasteners for receiving clamps for supporting the hanger to a ceiling. Round rollers are disposed on the intermediate parts of the hanger to engage the pipe and to freely support it for longitudinal movement.

3,687,407

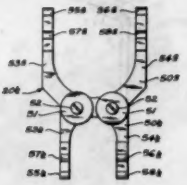
TEMPORARY PIPE SUPPORT

Burl D. Dickerson, 14355 Elm St., San Leandro, Calif.

Continuation-in-part of Ser. No. 742,217, July 3, 1968, abandoned. This application Feb. 19, 1970, Ser. No. 12,741
Int. Cl. F16l *3/12, 3/16*
U.S. Cl. 248—59 **6 Claims**

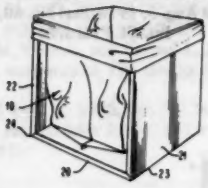
A device for rotatably supporting sections of electrical conduits, plumbing conduits, and like tubes and pipes during as-

sembly thereof. The pipe support device provides a temporary support for such conduits and is adapted to be removably secured to a building component which will generally be a U-shaped channel provided for the support of such conduits. The temporary pipe support device includes an open-mouthed arcuate cradle member equipped with rollers adapted to engage the peripheral surface of a conduit so as to rotatably support the same. Means are provided for removably securing the pipe



support to a building component with the cradle in position to underlie the conduit to be supported thereby. The support means includes bracket structure affixed to the cradle and oriented with respect to the open mouth thereof so as to avoid interference with any conduit supported by the device. Fastener means carried by the bracket structure cooperate with the building component so as to removably secure the pipe support thereto.

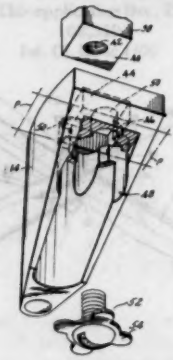
3,687,408
FOLDABLE SUPPORT FOR LIMP PLASTIC BAGS
Connie Lake, Pittsford, N.Y., assignor to Mobil Oil Corporation
Filed Aug. 19, 1970, Ser. No. 64,954
Int. Cl. B65b 67/12
U.S. Cl. 248—97 **16 Claims**



A unitary elongated strip of thermoplastic material, for example of polypropylene is formed with a pair of living hinges separating the strip into a central base portion and a pair of upstanding portions; the strip is reinforced by means of angles, ribs, or the like, or of sufficient thickness to be stable when erected and support a small polyethylene bag having its mouth folded over the edges of the support sections; interengaging latches are provided to maintain the supports upright and extended away from the base; when swung over the living hinges, the stiffening ribs, angles or material thicknesses are so arranged that they will fit into each other to enable flat folding of the frame.

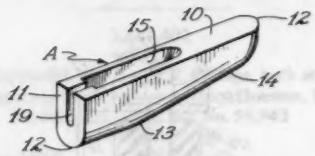
3,687,409
FASTENING SUPPORT MEANS
Billy G. Cook, Booneville, Ark., assignor to General Electric Company
Filed Feb. 24, 1971, Ser. No. 118,457
Int. Cl. F16m 13/00
U.S. Cl. 248—151 **12 Claims**

The invention discloses a fastening support means such as may be used between metallic and plastic members such as support legs and terminal guards in an electric skillet or similar device. The invention is directed to the fastening means whereby dissimilar materials can be joined together for sole support on a common plane for independent expansion between the parts and no compression of either. This over-



comes the tendency of skillet legs to loosen under constant use and provides a fastening means which remains permanently tight.

3,687,410
SHELF BRACKETS
Ephraim T. Holmgren, 11017 Camden Circle, Sun City, Ariz.
Filed March 17, 1971, Ser. No. 125,212
Int. Cl. A47g 29/02
U.S. Cl. 248—235 **5 Claims**

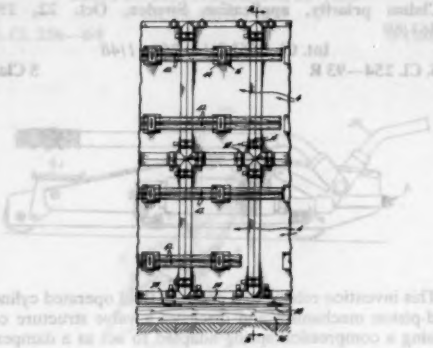


An elongated bracket arm includes a flat upper surface and an arm end wall at substantially right angles to said flat upper surface. A socket is provided in said flat upper surface spaced from the ends of the arm. The end of said socket most closely adjacent said arm end wall is on a plane which slopes downwardly and toward the plane of said arm end wall. A slot normal to the flat upper surface connects the end of the socket to the arm end wall to accommodate a fastening means extending therethrough.

3,687,411
CONCRETE FORM LOCKED BY UNIVERSAL KEY
Stanley J. Frazier, 3206 S. Hudson St., Seattle, Wash.
Filed Oct. 5, 1970, Ser. No. 77,935
Int. Cl. E04g 11/08, 17/14
U.S. Cl. 249—44 **19 Claims**

A readily assembled and readily stripped, reusable concrete form is constructed from a plurality of similar flat-faced panels having spaced, co-planer, open-ended edge-oriented slots in the margins of the other or opposite faces thereof; and a plurality of elongated L-shaped keys which are employed both to interlock the panels on each side of the form, and to interlock the form from side to side. The panels are arranged in two spaced, parallel, oppositely disposed, edge to edge, co-planer flat-faced arrays of the same; and are interlocked with one another in each array by placing a first set of the keys in the plane of the slots opposite points relatively within the margins of the panels, and slidably engaging the keys in the adjacent slots of adjacent panels. The arrays are interlocked with one

another by placing a second set of the keys in the plane of the slots opposite points relatively without the margins of the panels, slidably engaging the latter keys in the slots of the



panels along corresponding edges of the arrays, and interconnecting the latter keys with one another transversely of the space between the arrays.

3,687,412

CONCRETE SLAB MOLD

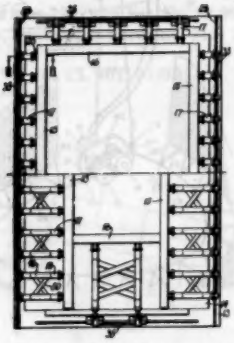
George Alfred Vaughan, and William Lawrence Dunn, both of Sheffield, England, assignors to Davy and United Engineering Company Limited, Yorkshire, England

Filed May 15, 1970, Ser. No. 37,778

Claims priority, application Great Britain, May 16, 1969, 25,083/69

Int. Cl. B28b 7/02

U.S. Cl. 249—158 **11 Claims**



A mould suitable for use in concrete moulding apparatus in which concrete held in the mould is subjected to a pressing action, the mould consists of a base on which a plurality of edge members are mounted to define an enclosure for the concrete. At least one of the members which constitutes one side of the enclosure is held in position on the base by at least two struts in the form of screw jacks. The struts are connected to the member and releasably anchored to the base outside of the enclosure. It is preferred for all the struts associated with each edge member to be so arranged that the struts can be simultaneously released from the mould base without adjusting the length of the struts.

3,687,413

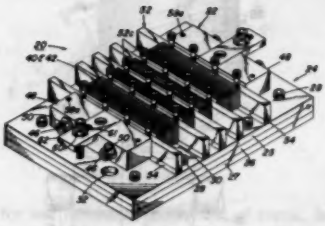
FABRICATION OF PLASTIC SPINNERETTES BY MEANS OF STACKED MANDRELS

Donald Murfitt, and James Bruce Peeso, Jr., both of Stamford, Conn., assignors to American Cyanamid Company, Stamford, Conn.

Division of Ser. No. 723,696, April 24, 1968, abandoned. This application Dec. 15, 1969, Ser. No. 889,794

Int. Cl. D01d 3/00

U.S. Cl. 249—160 **9 Claims**



The disclosed molding apparatus includes a plurality of mandrels, each in the form of a comb having spaced, parallel teeth, assembled into a mandrel stack. The mandrel stack is supported above a mold cavity into which the teeth extend. A plastic resin is poured into the mold and cured, and the mandrel stack is separated from the mold cavity to withdraw the teeth uniformly from the resulting casting. The holes left in one surface of the casting are filled with a grouting material, and the casting machined to form a finished spinnerette having shaped orifices.

3,687,414

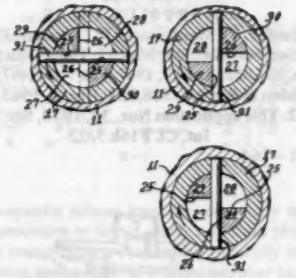
VALVE ASSEMBLY

William F. Petty, Cocoa, Fla., assignor to Robert G. Robbins, Doctors Inlet, Fla.

Filed Nov. 9, 1970, Ser. No. 87,809

Int. Cl. F16k 31/44

U.S. Cl. 251—77 **3 Claims**

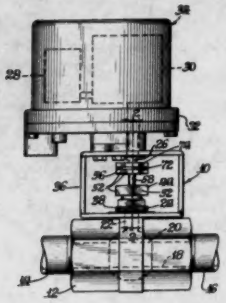


Valve assembly having at one end a valve actuator which is operative to move the valve from one position, such as an open position, into another position, such as a closed position, but which cannot thereafter be used to return the valve to its first or open position due to a lost-motion connection between them. On the opposite end of the valve assembly, a valve actuator is provided which cannot be operated by hand or by a conventional tool but can be operated by a special tool to return or reset the valve from its other position into its one position. The last mentioned valve actuator includes an arrangement for indicating unauthorized resetting of the valve.

3,687,415
MANUALLY OPERABLE POWER ACTUATED VALVE

Matthew E. Turkot, Lombard, Ill., assignor to Hill-McCanna Company, Carpentersville, Ill.

Filed Dec. 28, 1970, Ser. No. 101,617
Int. Cl. F16k 31/05
U.S. Cl. 251—89 13 Claims

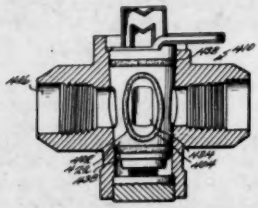


A manually operable power actuated valve has a rotary control stem disposed in coaxial relation to a driving stem actuated by a driving motor through a speed-reducing transmission. The flatted outer end of the control stem is fitted into a noncircular opening in a first coupling disc having a periphery shaped for convenient engagement and rotation by a wrench to open and close the valve manually. A second coupling disc, nonrotatably connected to the first disc by a pair of axially extending driving studs, is axially shiftable between a retracted, disconnect position in which the control stem is freed for manual rotation by a wrench applied to the first disc and an extended, power driving position in which a noncircular opening in the second disc receives the flatted outer end of the driving stem to releasably couple the two stems for power actuation of the valve. The shiftable coupling disc is yieldably retained in its extended position by engagement of a snap ring with V-notches in the driving studs.

3,687,416
ROTARY PLUG VALVE

Frank H. Mueller, 71 Montgomery Pl., Decatur, Ill.

Division of Ser. No. 828,309, May 27, 1969, which is a division of Ser. No. 627,832, April 3, 1967, Pat. No. 3,467,356, which is a division of Ser. No. 328,731, Dec. 6, 1963, Pat. No. 3,333,812. This application Nov. 30, 1970, Ser. No. 93,919
Int. Cl. F16k 5/02
U.S. Cl. 251—164 14 Claims

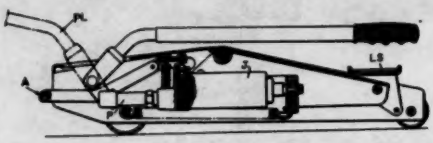


A tapered rotary plug valve having a resilient O-Ring secured to the periphery of an axial section of the valve plug and surrounding the plug port so as to contact the opposed surface of the valve seat.

3,687,417
AUTOMATIC CUSHIONING VALVE

Bengt Anders Bjork, Eskilstuna, Sweden, assignor to Domkraft AB Nike, Eskilstuna, Sweden

Filed Oct. 22, 1970, Ser. No. 83,174
Claims priority, application Sweden, Oct. 22, 1969, 14461/69
Int. Cl. B66f 7/14; B60p 1/48
U.S. Cl. 254—93 R 5 Claims

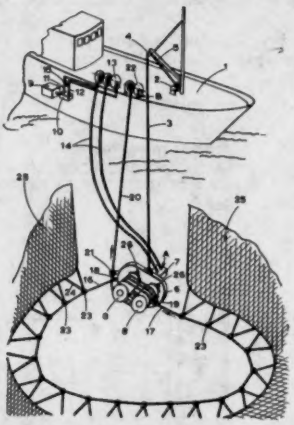


This invention relates to a pressure fluid operated cylinder-and-piston mechanism and discloses a valve structure comprising a compression spring adapted to act as a dampening restriction means when the said mechanism is forced by a heavy load from an extended position into a retracted position upon the opening of a bleed valve.

3,687,418
METHOD AND APPARATUS FOR HAULING UNDERWATER ROPES AND THE LIKE

Jacob Schoning Halvorsen, Oslo, Norway, assignor to Rapp Fabrikker A/S, Boda, Norway

Filed Aug. 13, 1970, Ser. No. 63,555
Int. Cl. B66d 1/76
U.S. Cl. 254—175.7 11 Claims



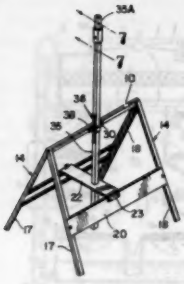
In marine operations with underwater lines, such as fishing lines, a method is provided of hauling a length of such line by means of two separate and mutually spaced hauling means. A first hauling means includes a submersible hauling means adapted to be suspendedly supported in submerged position approximately at the level of said the underwater line and is able to haul the line in frictional engagement therewith. There is provided a means to maintain an oppositely directed counter balancing force in the first hauling means, whereby the line is hauled in substantially horizontal direction with suitable speed through the first hauling means. The second hauling means for the line is mounted on a vessel, the length of the line being hauled and delivered from the submerged hauling means being hoisted up by the second hauling means and stored on the vessel.

3,687,419

COLLAPSIBLE BARRICADE ASSEMBLY

Richard F. Forestal, Indianapolis, Ind., assignor to Hi-Vu Inc., Indianapolis, Ind.

Filed Feb. 22, 1971, Ser. No. 117,256
Int. Cl. E01f 13/00
U.S. Cl. 256—64 6 Claims



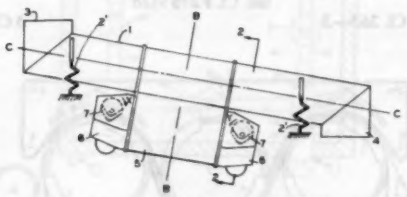
A collapsible barricade assembly having an elongated beam swingably connected to a pair of leg frames movable between a generally coplanar collapsed position and a diverging extended position. A brace is swingably interconnected to one of said frames and is engageable with means on the other of said frames for releasably retaining said frames in extended position. A ground-engageable post is removably supported by said brace and beam to project above said beam for supporting signal equipment in an elevated position.

3,687,420

DEVICE FOR MIXING GRANULAR AND/OR PULVERIZED BULK MATERIAL

Hans Schweinfurth, and Rolf Lambach, both of Hagen, Germany, assignors to Friedrich UHDE GmbH, Dortmund, Germany

Filed May 22, 1970, Ser. No. 39,892
Claims priority, application Germany, May 23, 1969, P 19 26 291.0
Int. Cl. B01f 11/00
U.S. Cl. 259—2 2 Claims



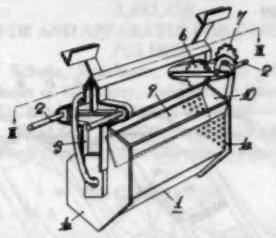
A vibratory conveyor for mixing granular or pulverized material is vibrated along a straight inclined path perpendicular to the longitudinal axis of the conveyor trough. Material in the trough, because of the inclined transverse vibration, tends to move or roll in a closed path with the material in contact with the trough moving toward and up the side of the trough and the material on top sliding down toward the low side of the mass of material, thus being gently but thoroughly mixed. The mass of material, because of a slight lengthwise decline of the trough, slowly moves toward the lower end, i.e. discharge end, of the trough as it is mixed. Preferably, the trough is vibrated by a pair of contra-rotating, inertially synchronized eccentric weights.

3,687,421

BARREL FOR USE IN SURFACE TREATMENT OF METAL

Siro Kanazu, 43 of No. 1, Meiraku-cho, Nakamura-ku, Nagoya, Japan

Filed May 21, 1970, Ser. No. 39,393
Claims priority, application Japan, July 3, 1969, 44/52877
Int. Cl. B01f 9/02
U.S. Cl. 259—81 R 3 Claims



A barrel for use in surface treatment of metal, having an opening through which material to be treated is put in and treated material is taken out automatically, said opening being provided with a door which turns on hinges fitted to one of the longitudinal edges of the opening. This barrel is so designed that its door opens inwardly but closes outwardly while it is rotating, whereby necessary treatment is effected while the barrel is turning in the normal direction and treated material is taken out automatically if the barrel is turned in the reverse direction

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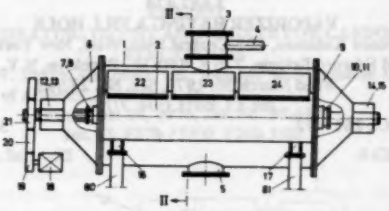
3,687,422

MULTIPLE SPINDLE MIXING DEVICE

Heinz List, St. Jakobstrasse 43, Pratteln, Switzerland

Filed March 16, 1970, Ser. No. 19,694
Claims priority, application Switzerland, March 17, 1969, 4103/69
Int. Cl. B01f 7/00; B29f 1/10
U.S. Cl. 259—104 9 Claims

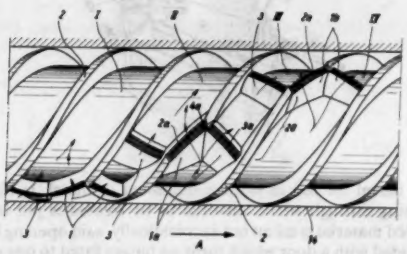


A multiple-spindle mixing kneader, especially for carrying out thermal processes in liquid, pasty and solid phases, which is of the type comprising a stationary, generally horizontally disposed housing in the form of a drum member having a substantially centrally arranged stirrer shaft member upon which there are mounted radially extending members, typically paddles or disc sectors. According to an important aspect of the invention kneading bar members are arranged between the disc sectors or paddles, also between the latter and the stirrer or agitator arms which move past the end walls of the housing, these kneader bar members wiping the inner surfaces of such housing. Further, a second stirrer shaft member is arranged parallel to the first stirrer shaft member in a further housing disposed parallel to the first housing. This second shaft member possesses stirrer arm members which, on the one hand, clean the inner surfaces of the aforementioned further housing and, on the other hand, also clean the shaft member and the lateral disc surfaces of the first stirrer shaft member.

3,687,423
CONTINUOUSLY OPERATING SCREW MACHINE FOR THE TREATMENT OF PLASTIC MASSES

Heinz Koch, Ludwigsburg, and Eugen Martin Vohringer, Bietigheim, both of Germany, assignors to Firma Werner & Pfleiderer, Feuerbach, Germany

Filed Dec. 19, 1969, Ser. No. 886,571
Claims priority, application Germany, Dec. 21, 1968, P 18 16 440.4
Int. Cl. B01f 7/02
U.S. Cl. 259—109 44 Claims

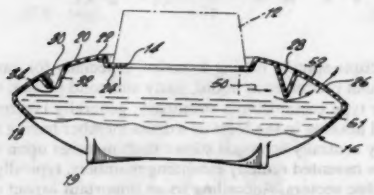


A continuously operating, preferably single screw shaft, multiple-thread screw machine for the treatment, such as, for example, kneading, mixing and homogenizing, of plastic masses with a housing surrounding the screw shaft. The kneading, mixing and homogenizing treatment is carried out by the repeated and controlled separation and recombination of the stream of material. The separation and recombination is accomplished by a screw provided with cross webs in the individual screw channels and longitudinal webs on the outer periphery of the screw threads. The outer edges of the longitudinal webs are spaced from the inner wall of the housing at a greater distance than the clearance of the screw threads with respect to the inner wall of the housing. In addition, the longitudinal webs and cross webs have a flat rising slope of about between 15° to 30° in the direction of rotation of the screw.

3,687,424
VAPORIZER HAVING A FILL HOLE

Lawrence Katzman, 101 Central Park West, New York, N.Y., and Edward Briggin, 720 E. 84th St., Brooklyn, N.Y.

Filed March 30, 1970, Ser. No. 23,902
Int. Cl. B01f 3/04, 7/16
U.S. Cl. 261—72 3 Claims

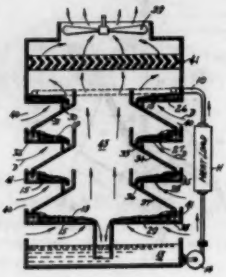


A humidifier comprising a container having a bowl-shaped lower portion. Integral with the lower portion is an upper wall which slants upwardly and inwardly and terminates in a top having a main opening for receiving a vapor-producing head. A Baffle is integral with the upper wall and is spaced between an outlet opening and the main opening. A fill opening having a conical downwardly and inwardly tapering wall extending below the outlet opening is provided at a location diametrically opposite the outlet opening.

3,687,425
PROCESS AND APPARATUS FOR HEAT AND/OR MASS TRANSFER BY DIRECT CONTACT

Robert Katz, 564 Church Ave., Woodmere, N.Y.

Continuation-in-part of Ser. No. 730,851, May 21, 1968, Pat. No. 3,525,309. This application July 15, 1970, Ser. No. 55,069
Int. Cl. B01d 3/04
U.S. Cl. 261—114 R 3 Claims

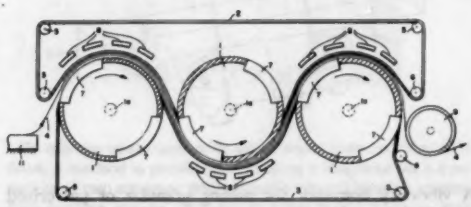


Heat and/or mass interchange by direct contact between a liquid, such as water, and a gas, such as air, is effected by causing the gas to bubble through a layer or layers of the liquid, the liquid being caused to flow over a perforated pan or pans and the gas being forced through the perforations by being supplied at a pressure sufficient to overcome the hydrostatic heat of the liquid. Where a number of pans are employed, the liquid can flow over them in series in two or more streams in parallel. The process and apparatus are of particular value for the cooling of coolant water of air conditioning systems with the aid of air, for the cleaning of polluted air, for the scrubbing of gases with water or other liquids, and for the fractionation of mixture of liquids by means of air or other gas.

3,687,426
APPARATUS FOR THE CONTINUOUS TREATMENT OF SHEET MATERIAL

Werner Bandel, and Ernst Pirot, both of Wuppertal-Barmen, Germany, assignors to J. P. Bemberg Aktiengesellschaft, Wuppertal, Germany

Filed Sept. 9, 1970, Ser. No. 70,850
Claims priority, application Germany, Sept. 11, 1969, P 19 45 998.4
Int. Cl. F27b 9/28
U.S. Cl. 263—3 3 Claims



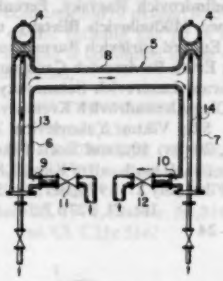
Apparatus for supporting and continuously transporting a sheet material, e.g., in the treatment of endless films or foils of a thermoplastic polymer, including a plurality of aligned rolls or drums having rectangular grooves adjacent their outer edges which receive two pairs of sheet clamping belts, each individual belt extending in a continuous loop path under tension and only one belt of each pair riding flush within the rectangular grooves to hold the sheet material firmly in its transported position on the rolls and between adjacent rolls.

3,687,427

SKID BEAM SUPPORTING STRUCTURE FOR THE HEATING FURNACE OF WALKING BEAM TYPE

Taketoshi Mori, 101 Tsukita-shijo, Yawata-ku, Fukuoka Prefecture, Kitakyushu, and Sizuo Iwatake, 5-22, Wakasono-1-chome, Kokura-ku, Fukuoka Prefecture, Kitakyushu, both of Japan

Filed Nov. 23, 1970, Ser. No. 91,754
Claims priority, application Japan, Nov. 24, 1969, 44/111226
Int. Cl. F27d 3/12
U.S. Cl. 263—6 A 4 Claims



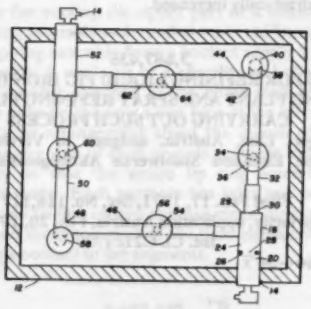
In walking beam equipment consisting of movable skid beams and fixed skid beams for a heating furnace of the walking beam type, a skid beam supporting structure, of which tubular supports and horizontal members are erected to form a shape similar to the letter "H" sectionally, these members being connected so as to have cooling water run internally therethrough, with the cooling water discharging tubes set inside the supports with the openings thereof placed near the tops of the supports.

3,687,428

TOBACCO CURING APPARATUS

Karl F. Remick, Seaford, N.Y., assignor to Cities Service Oil Company

Filed Dec. 30, 1970, Ser. No. 102,746
Int. Cl. F23l 9/04
U.S. Cl. 263—19 D 3 Claims



Apparatus for heating a tobacco barn in order to cure the tobacco rapidly and effectively is disclosed herein. The apparatus comprises in combination with the barn, a pair of heat exchangers, each exchanger being mounted on diagonally opposite walls of the barn, and a high speed fuel oil burner with continually operating blowers mounted in the exchanger end adjacent the barn wall. Each heat exchanger is connected to an axially extending duct and to a perpendicularly extending duct, the opposite ends of the two ducts being intraconnected with the other heat exchanger ducts so as to form a quadrilateral arrangement of ducts on the floor of the barn. Air diffusers are spacedly mounted at equal intervals on the upper sides of each of the aforementioned ducts and act to evenly distribute hot air into the barn.

3,687,429

Patent Not Issued For This Number

ERRATUM

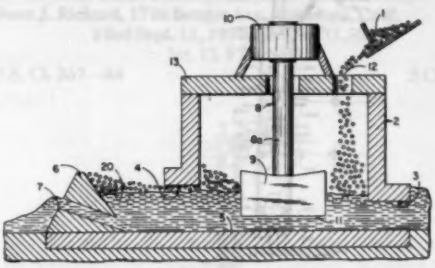
For Class 263—52 see:
Patent No. 3,687,431

3,687,430

METHOD OF AND APPARATUS FOR DESULFURIZING PIG IRON

Hans-Peter Schulz, Hattingen, and Jorn Mandel, Gelsenkirchen, both of Germany, assignors to Rheinstahl Huttenwerke A.G., Am Pheinstahlhaus, Germany

Filed Sept. 4, 1970, Ser. No. 69,600
Claims priority, application Germany, Sept. 6, 1969, P 19 45 275.6
Int. Cl. C21c 7/00
U.S. Cl. 266—34 A 11 Claims



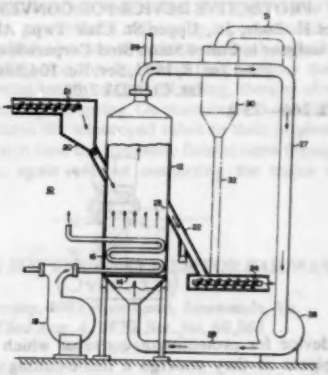
Pig iron in the tap spout of a blast furnace is desulfurized by passing it through a vessel containing a rotating inverted T-shaped stirring element which mixes the pig iron and a desulfurizing agent as they pass from the inlet to the outlet of the vessel. From the outlet, a trough conveys the treated pig iron to a flue with an overflow edge located at a level above the bottom surface of the outlet. The flue is arranged to separate the pig iron from the spent desulfurizing agent.

3,687,431

PREHEATING OF DRY AGGREGATE FOR CARBON ELECTRODES

Keith W. Parks, Oakmont, Pa., assignor to Aluminum Company of America, Pittsburgh, Pa.

Filed Dec. 18, 1970, Ser. No. 99,617
Int. Cl. F27b 15/00; F26b 3/08
U.S. Cl. 263—52 4 Claims



A process for heating aggregate particles of calcined coke for mixing with a carbonaceous binder such as pitch. The

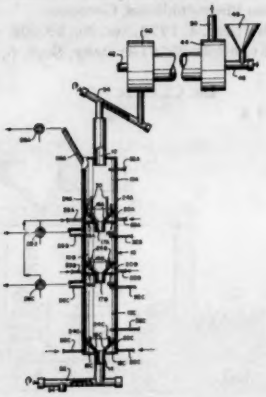
process comprises the steps of directing the particles to a bed thereof fluidized by a gaseous stream, heating the particles with a source of radiant heat disposed directly in the path of the fluidizing stream, preferably directly in the bed itself, and removing the heated particles from the bed for immediate mixing with the carbonaceous binder.

3,687,432

RECOVERY OF COPPER

Terence McNulty, 8000 S. Kolb Road, Tucson, Ariz.

Division of Ser. No. 828,801, May 26, 1969, Pat. No. 3,630,721. This application April 14, 1971, Ser. No. 133,956
Int. Cl. C22b *15/00*
U.S. Cl. 266—9 10 Claims



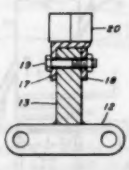
Low grade, finely disseminated copper oxide ores are beneficiated to enhance the winning of metallic copper therefrom by crushing and sieving the ore to particles of suitable size, preheating the ore particles, reacting a chlorine-donating gas with the ore particles at a controlled elevated temperature to form copper chloride (preferably cuprous chloride) therein and maintain it substantially in molten liquid form, and then reducing the molten liquid form, and then reducing the molten liquid copper chloride at the elevated temperature to metallic copper with a reducing gas. Further benefits are derived by carrying out the preheating step in a reducing or oxidizing atmosphere, and by passing an oxidizing gas through the ore particles after chlorination and before reduction to metallic copper. Apparatus is also described for carrying out the foregoing processes continuously.

3,687,433

PROTECTIVE DEVICE FOR CONVEYORS

Charles H. Bode, Jr., Upper St. Clair Twp., Allegheny Cty., Pa., assignor to United States Steel Corporation

Filed Jan. 8, 1971, Ser. No. 104,886
Int. Cl. B23k *7/02*
U.S. Cl. 266—23 R 4 Claims



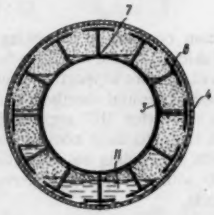
A device for protecting a conveyor which carries metal workpieces as they undergo a flame-cutting operation. Intended particularly for conveyors which carry continuously cast products as segments are cut therefrom. Conveyor includes endless chains and slats extending between chains. Flame-cutting apparatus travels in synchronism with workpiece as it cuts and sometimes lies directly over a slat. Protective device overlies such slat and workpiece rests thereon. Damage is confined to protective device if flame-cutting apparatus lies directly thereover.

3,687,434

HOLLOW TYRE OF ROTARY FURNACES AND METHOD OF EQUALIZING TYRE TEMPERATURES

Ernest Matveevich Dyskin, ulitsa Ezhena Potie, 9, kv. 61.; Georgy Vladimirovich Raevsky, Pereulek Mechnikova, 3, kv. 6.; Semen Mikhailovich Biletsky, ulitsa Vernadskogo, 69a, kv. 9.; Eduard Jurievich Burmenko, ulitsa Entuziastov, 47, kv. 30.; Erikh Ruvimovich Grosman, ulitsa Artema, 10 kv. 62.; Abram Lazarevich Satanovsky, ulitsa Basseinaya, 5a, kv. 5.; Oleg Alexandrovich Kremnev, Bulvar Shevechenka, 51 kv. 52.; Viktor Yakovlevich Zhuravlenko, ulitsa Pimonenko, 20, kv. 10., and Boris Nikolaevich Protsyshin, ulitsa Bobry put, 4, kv. 1., all of Kiev, U.S.S.R.

Filed July 27, 1970, Ser. No. 58,613
Int. Cl. F27b *7/38*
U.S. Cl. 266—24 2 Claims



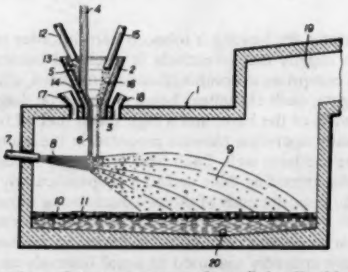
There are proposed a hollow tyre and a method of equalizing the temperature of this tyre by means of a heat carrier introduced into its inner space. Owing to the face that blades are arranged within the tyre space while the heat carrier is poured to a definite level, during the rotation of the tyre the heat carrier is distributed as a thin layer over the surface of the internal belt of the tyre and this results in intensive evaporation of the heat carrier on the internal belt and in condensation thereof on the external belt. As a result, the intensity of heat transfer is drastically increased.

3,687,435

PROCESS FOR REFINING LIQUID PIG IRON IN A SPRAY REFINING PLANT AND SPRAY REFINING PLANT FOR CARRYING OUT SUCH PROCESS

Alois Hager, Linz, Austria, assignor to Vereinigte Osterreichische Eisenund Stahlwerke Aktiengesellschaft, Linz, Austria

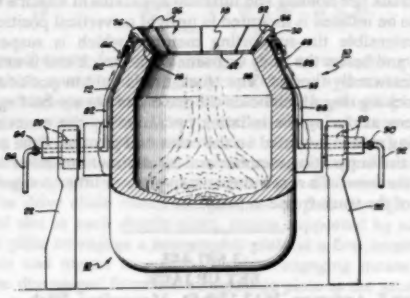
Filed Feb. 17, 1971, Ser. No. 116,117
Claims priority, application Austria, Feb. 20, 1970, 1557
Int. Cl. C21c *1/00*
U.S. Cl. 266—34 T 6 Claims



The invention relates to a process for refining liquid pig iron in a spray refining plant, in which the pig iron is introduced

into the refining vessel and the pig iron stream falling into the refining vessel is atomized by a horizontally blown in refining gas jet under formation of a spraying cone, and additions, such as lime, lime stone, fluorspar, bauxite, ore and the like are added into the spraying cone, wherein the improvement resides in that the pig iron and, if desired, at least part of the additions are guided prior to atomization onto the slanting inner face of a supply funnel having a slit-shaped bottom opening and that the pig iron stream forming in the supply funnel is permitted to fall into the refining vessel under broadening of its profile in the form of a curtain and is brought into reaction contact with the spraying agent. Thus the advantage is achieved that the consumption of oxygen is lowered because the refining effect of the refining gas jet is essentially improved. Almost no oxygen is contained in the waste gas, and the yield is greatly increased.

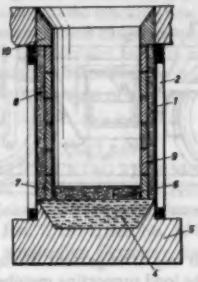
3,687,436
COOLING APPARATUS FOR CONVERTER
Stephen Wortman, Chicago, Ill., assignor to Kaiser Industries Corporation, Oakland, Calif.
Filed July 28, 1970, Ser. No. 58,810
Int. Cl. C21c *5/42*
U.S. Cl. 266—35 **13 Claims**



Apparatus for cooling the upper part of a converter comprises a lip ring assembly and conduit means to transmit a coolant to the lip ring assembly from a coolant supply source. The lip ring assembly is made up of a plurality of hollow arcuate segments releasably attached to the outer shell of the converter which rests on the upper end face of the refractory lining in a circular arrangement about the mouth of the converter. The upper wall of each arcuate segment extends radially inwardly so that the entire lip ring assembly has a frustoconical shape. Each segment has inlet and outlet conduits connected to one of two annular pipes surrounding the outer shell and forming a part of the fluid conducting system for supplying a coolant to the segments.

3,687,437
METALLURGICAL FURNACES OR VESSELS
Wilhelm Anton Fischer, Ratingen, Germany, assignor to Dynamit Nobel Aktiengesellschaft, Troisdorf, Germany
Filed Aug. 19, 1970, Ser. No. 65,232
Int. Cl. F27b *14/00*
U.S. Cl. 266—43 **13 Claims**

A metallurgical furnace or vessel is provided with a refractory lining consisting of an outer layer of tamped granular ceramic material and an inner layer, which forms a protective sheathing for the outer layer and consists of bricks made of fused lime, fused dolomite, chrome magnesite, or fused magnesia. The tamped layer of ceramic material may consist of fused magnesia or stabilized zirconium oxide or alternatively of granular quartzite, corumdum, mullite or spinel. In the latter case, an intermediate layer is provided between the tamped layer and the inner brick layer to prevent reaction



between the bricks and the tamped material. The intermediate layer consists of fused magnesia or stabilized zirconium oxide.

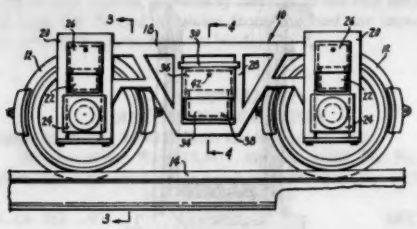
3,687,438
MOTORCYCLE SUSPENSION APPARATUS
Donn J. Rickard, 1726 Bender Ave., Glendora, Calif.
Filed Sept. 11, 1970, Ser. No. 71,301
Int. Cl. F16f *5/00*
U.S. Cl. 267—64 **3 Claims**

Each wheel suspension member includes a pair of telescoping tubes, one connected to the cycle frame and the other connected to the wheel axle. As the wheel receives a perturbation, the tubes are telescoped further within one another which forces an enclosed hydraulic fluid through restricting orifice means to damp the effect received at the upper cycle frame. Simultaneously, an enclosed coil spring is compressed by the same action, which also serves to dampen shock and vibration effect. Conduiting for the hydraulic fluid isolates the fluid from a substantial length of the coil spring, thereby obviating fluid entrapment by the spring. On resuming rest condition the coil spring returns the telescoped tubes to their original relationship, at which time the hydraulic fluid returns through the orifice means, again without contacting the major spring length.

3,687,439
AIR BAG SUSPENSION SYSTEM FOR RAILWAY VEHICLES
Guyton E. Hornsby, 4001 Rose Land, Annandale, Va.
Filed Aug. 4, 1970, Ser. No. 60,861
Int. Cl. F16f *5/00*
U.S. Cl. 267—65 **1 Claim**

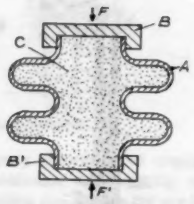
An air bag suspension system for railway vehicles in which the wheel supporting axles are vertically slidably connected to

longitudinal support beams with an air bag disposed between the top portion of the axle and a corresponding portion of the



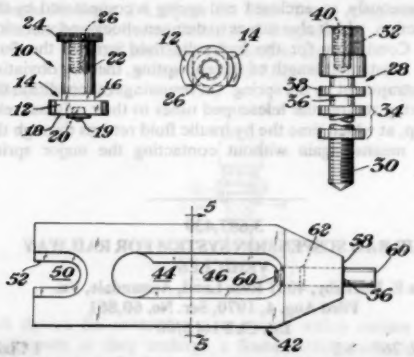
beam. A similar air bag arrangement is employed in the connection between the load supporting member and the beam.

3,687,440
ELASTOMER DAMPING SPRING
Jean Jarret, Fourqueux, and Jacques Jarret, Le Vesinet, both of France, assignors to Societe D'Exploitation Des Ressorts Auto-Amortisseurs, Paris, France
Filed July 24, 1970, Ser. No. 58,064
Claims priority, application France, July 25, 1969, 6925562
Int. Cl. F16f *1/37*
U.S. Cl. 267—141 **3 Claims**



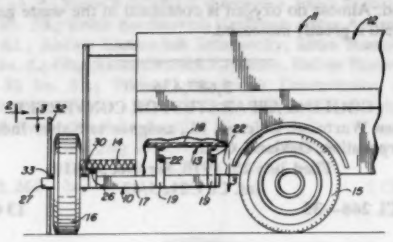
A damping spring comprising an elastomer composition received in a deformable enclosure. The spring comprises an enclosure embodied by annular elements 1, 1′ which are placed one above another and which have a thin flexible outer part 1*a* and a rigid thick central part 2 whose edge bears on the substantially linear surface of a plug B, B′ or of an intermediate disc 3 on which it can oscillate.

3,687,441
MACHINE TOOLS
Robert F. Anderson, 3613 13th St., Menominee, Mich.
Filed Oct. 5, 1970, Ser. No. 77,980
Int. Cl. B23q *3/02, 3/10;* **B25b** *5/10*
U.S. Cl. 269—47 **5 Claims**



Machine tools comprising new and useful clamping components and in combination of a set-up and hold-down assembly of a T-nut, stud, strap clamp and leveling unit are disclosed. The set-up and hold-down tools are designed to provide ready assembly and disassembly from a T-slotted work table and for universal adjustment with regards to leveling.

3,687,442
TRUCK TIRE HOLDING AND INFLATION APPARATUS
Richard E. Goff, Kenosha, Wis., assignor to Rollin F. Christopherson, Kenosha, Wis.
Filed Oct. 23, 1970, Ser. No. 83,379
Int. Cl. B60c *25/00;* **B62d** *43/04*
U.S. Cl. 269—17 **8 Claims**



A truck tire holding and inflation apparatus in which a truck tire to be inflated is mounted in upright or vertical position on an extensible tire-supporting member which is suspended from and below the body or frame of the truck and is extensible rearwardly thereof. The truck tire is held in position and the locking ring which holds the tire on its rim are held against movement during the inflating operation by the coaction of holding means mounted on the outer end portion of the extensible tire-supporting member and an abutment member which is in the form of a rear bumper-step plate or other cooperating part of the truck frame or body.

3,687,443
SET UP JACK
Robert F. Anderson, 3613 13th St., Menominee, Mich.
Continuation-in-part of Ser. No. 77,980, Oct. 5, 1970. This application Dec. 11, 1970, Ser. No. 97,086
Int. Cl. B23q *3/04;* **E04g** *25/06;* **F16m** *13/00*
U.S. Cl. 269—309 **6 Claims**

A set up jack and certain sub-assemblies for use in machining operations designed to provide ready assembly and disassembly from a T-slotted work table and for universal positioning of a jack support pad.

3,687,444

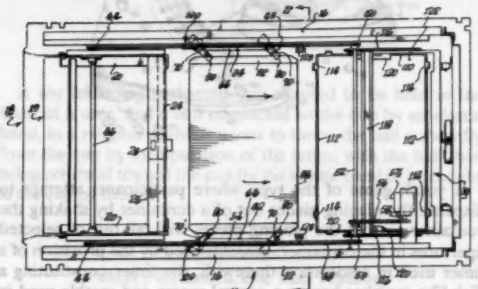
Patent Not Issued For This Number

3,687,445

XEROGRAPHIC PLATE TRANSPORTING MECHANISM

Gunter E. Becker, Manhattan Beach, Calif., assignor to Xerox Corporation, Stamford, Conn.

Filed Aug. 31, 1970, Ser. No. 68,098
Int. Cl. B65h 5/10
U.S. Cl. 271—54 16 Claims



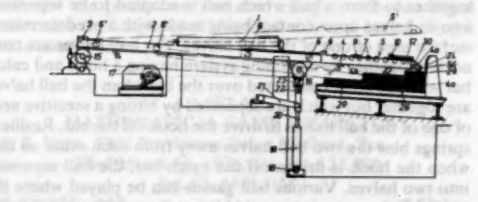
A mechanism for transporting a flat xerographic plate through an automated xerographic processing system including a pair of opposed shuttle plates, each of the shuttle plates having a vertical slot therein, endless drive chain means passing over sprocket wheels at each of two terminal positions, means to drive the drive chain means in one direction only, a pin securely mounted on each drive chain associated with the drive chain means and adapted to pass through the vertical slot in each shuttle plate, means supported by each shuttle plate to engage a xerographic plate at a first terminal position and means to cause the plate engaging means to become disengaged from the xerographic plate at the second terminal position. In each terminal position, the pins passing through the vertical slots engage the outer periphery of the sprocket wheels therein and, with continued movement of the drive chains, the pins are caused to move either upwardly or downwardly within each slot whereby the direction of travel of the shuttle plates is reversed. Thus, continuous unidirectional motion of the drive means is smoothly translated into two-directional movement of the plate transport mechanism along a single horizontal plane.

3,687,446

TRANSFER DEVICE FOR METAL PLATES

Karl Josef Neumann, and Otto Ostbringhaus, both of St. Ingbert-Saar, Germany, assignors to Moeller & Neumann GmbH, Ensheimer, Germany

Filed Dec. 28, 1970, Ser. No. 101,801
Claims priority, application Germany, Dec. 22, 1969, P 19 65 113.9
Int. Cl. B65h 29/50
U.S. Cl. 271—63 5 Claims



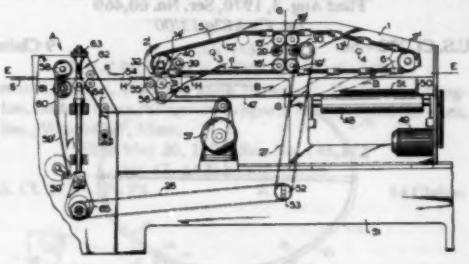
A transfer device for shifting metal plates laterally from a rollway to a stacking box includes a displaceable transfer table by which the plates are lifted off the rollway and conveyed towards the stacking box, and on which the plates travel into engagement with a stop in the stacking box. The transfer table is provided with means which cause the plates to drop gently into the box when the transfer table is moved back again. Means are disclosed for controlling the height of the drop in relation to the prevailing height of the stack in the box.

3,687,447

APPARATUS FOR STACKING THERMOPLASTIC BAGS

Friedhelm Mundus, Schillerstrabe, Germany, assignor to Windmoller & Holscher, Westphalia, Germany

Filed Jan. 7, 1971, Ser. No. 104,565
Claims priority, application Germany, Jan. 16, 1970, P 20 01 927.6
Int. Cl. B65h 29/04
U.S. Cl. 271—79 9 Claims



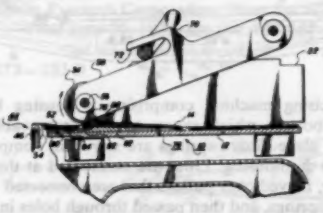
An apparatus for stacking thermoplastic bags having weld seams extending transversely to the direction in which they are received comprises: a plurality of gripping bars for grasping the leading edges of the bags and conveying them to a stacking station; a pair of confronting endless congruent guide grooves for receiving the ends of the gripping bars so they can be conveyed along the length of the conveying path; an upstream and a downstream pair of endless conveyor chains for conveying the gripping bars along the conveying path, the downstream pair of endless conveyor chains moving slower than the upstream pair of conveyor chains; and means for releasably attaching the gripping bars with said pairs of endless conveyor chains so that the gripping bars can be conveyed by said upstream chains from a bag receiving position to an intermediate location and wherein the bags can be further transferred by said downstream pair of chains from said intermediate location to a stacking position.

3,687,448

SHEET FEEDING APPARATUS

Kishore N. Vora, Rochester, N.Y., assignor to Xerox Corporation, Stamford, Conn.

Filed Dec. 28, 1970, Ser. No. 101,670
Int. Cl. B65h 3/06, 3/52
U.S. Cl. 271—21 5 Claims



A tray for supporting a stack of sheet material to be fed sequentially therefrom. The tray includes side support plates to align the sheets in the direction of feed, a backup plate to

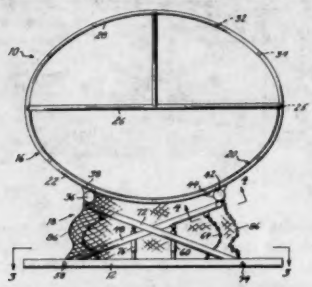
retard rearward movement of the sheets in that direction and front snubber tabs engageable with the top, front edge of the topmost sheet in the stack. The sheets are fed therefrom by rollers which give an initial rearward movement to the topmost sheet. Rearward movement of the sheet is prohibited by the backup plates as the front edge of the sheet is withdrawn from beneath the snubber tabs as a reverse buckle is formed in the sheet. The feed rolls are then reversed to feed the sheet over the snubber tabs and out of the tray. The upper sheet supporting surface of the tray includes a contoured plate coactable with the rollers to maintain normal distribution of forces on each sheet of the stack, regardless of the height of the stack and thereby assure the feeding out of single sheets including the last sheet from the tray.

3,687,449

ROCKABLE GYM SUPPORT SURFACE

Don Eric Newman, 6015 Concord St., Philadelphia, Pa.

Filed Aug. 3, 1970, Ser. No. 60,469
Int. Cl. A63g *13/00*
U.S. Cl. 272—56 **9 Claims**



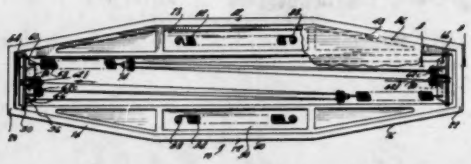
An amusement device is disclosed which is gravity biased by a suspension system to a center point and adapted to rock above and below the center point in a plane defined by side frames. The amusement device includes a semi-elliptical support surface on which children may stand, sit, slide or climb during the rocking movement. An adjustable dashpot may be used to slow the rate of rocking movement. To prevent injury to children, a mesh-type fence encloses the suspension system.

3,687,450

SPRING TYPE RESISTANCE EXERCISING DEVICE

William A. Schollmeyer, Yonkers, N.Y., assignor to Svea De Grote, New York, N.Y.

Filed Aug. 21, 1970, Ser. No. 65,888
Int. Cl. A63b *21/00, 21/02, 21/16*
U.S. Cl. 272—83 R **6 Claims**



An exercising machine comprising a housing having a removable bottom which serves to hold removable pulley brackets in place. Share springs are stored in compartments provided in the housing. Lines are connected at the ends of the housing, reeved over pulleys that are connected to pulley blocks and springs, and then passed through holes in the platform on top of the housing. Hand grips are attached to the lines for grasping by the user so that during an exercising program the springs will offer resistance to a pulling force on the lines.

3,687,451

GAME DEVICE

Jeffrey D. Breslow, Chicago, Ill., assignor to Marvin Glass & Associates

Filed Aug. 24, 1970, Ser. No. 66,245
Int. Cl. A63f *9/00*
U.S. Cl. 273—1 R **5 Claims**

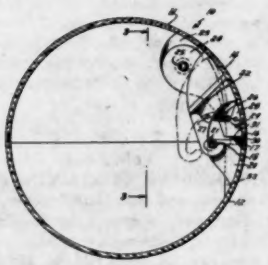
A youth game of the type where participants attempt to dispense the playing pieces out of a container by shaking the container so that the playing pieces will fall out of selected apertures in the container; characterized by the provision of a timer used in association therewith, the timer constituting a dish-like member having a central recess and marble used in association therewith, further characterized by the provision of playing pieces of different physical characteristics which are to be dispensed out of the container and some of which determine further conduct of the game. The selected apertures are in the side walls of the container and are obstructed by inwardly projecting bosses.

3,687,452

GAME BALL

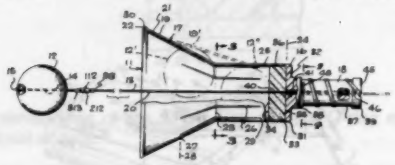
Rayford L. Thompson, 3840 Seabridge Drive, Orlando, Fla.

Filed Dec. 2, 1970, Ser. No. 94,254
Int. Cl. A63b *37/10, 39/08, 43/00*
U.S. Cl. 273—58 A **6 Claims**



A split-ball apparatus having a pair of ball halves connected together to form a ball which ball is adapted to be separated into its halves upon contact being made with a predetermined surface area of one of the ball halves. The ball halves are connected together by a latching system having a hook and catch bar with the hook connected over the bar when the ball halves are together but which are separated by hitting a sensitive area of one of the ball halves to drive the hook off the bar. Resilient springs bias the two ball halves away from each other so that when the hook is driven off the catch bar, the ball separates into two halves. Various ball games can be played where the object of the game is to avoid hitting the sensitive area on the surface of the ball to prevent the ball from separating, or alternatively, to hit the sensitive area to make the ball separate.

3,687,453
BALL AND CUP TOY
Cornelio Fraga, 6047 King Ave., Maywood, Calif.
Filed Oct. 16, 1970, Ser. No. 81,247
Int. Cl. A63b 71/00
U.S. Cl. 273—97 R 3 Claims



A toy including a tapered cup adapted to be held in the hand of a user, and a ball connected to the cup by an elastic band, in a relation enabling a user to throw the ball outwardly from the cup by manipulation of the latter, with the ball then being returned toward the cup by the elastic band to be caught in the cup by the user.

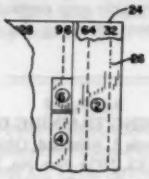
3,687,454
Patent Not Issued For This Number

3,687,455
SET OF PLAYING PIECES
Marc Odier, 85 Bd Exelmans, Paris 16e, France
Filed June 22, 1970, Ser. No. 47,969
Claims priority, application France, June 26, 1969, 6921629; July 9, 1969, 6923414; July 11, 1969, 6923664; Jan. 1, 1970, 7000840
Int. Cl. A63f 9/20
U.S. Cl. 273—137 AE 2 Claims

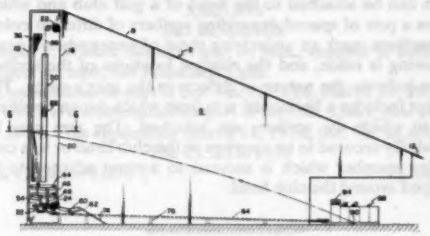
The present invention is concerned with various improvements in the game forming the subject of copending U.S. Pat. Application, Ser. No. 787,162, filed Dec. 26, 1968, in which the game described comprises a set of polygonal playing pieces similar in shape and in dimensions, each apex of each piece carrying a conventional value chosen from a plurality of possible values, the number of pieces of the set being such that all the possible combinations of said values are reproduced once and only once. According to one of these improvements, the playing pieces also carry a further conventional value in at least one additional point, known as site, intermediate between two of their apices. In one embodiment of the invention the pieces have the form of a regular trapezoid with the long base twice the length of the small base and the oblique sides, the site being located on the long base. In another embodiment the pieces are isosceles triangles with two equal sides twice the length/of of the third side and each having a site located thereon.

3,687,456
MATHEMATICAL GAME APPARATUS
Roy R. Vann, 3302 Providence Drive, Midland, Tex.
Filed March 10, 1971, Ser. No. 122,900
Int. Cl. A63f 9/18
U.S. Cl. 273—161 7 Claims

A mathematical game apparatus comprised of a panel having consecutive numerals disposed thereon, and further including a plurality of removable masks for obscuring selective consecutive ones of the numerals. A plurality of groups of predetermined numbers are included in the apparatus, so that one may select any one numeral appearing on the panel, and another player can determine the selected numeral by placing one or more certain mask corresponding to certain groups onto the panel so as to obscure consecutive numerals thereon. The last obscured numeral is the selected numeral.

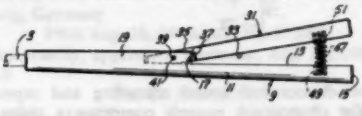


3,687,457
GOLF PRACTICE DEVICE AND GAME
James N. Mason, Waquoit, and Charlotte C. Davidson, Arlington, both of Mass., assignors to Sports Management Services, Inc., Winchester, Mass.
Filed May 20, 1971, Ser. No. 145,172
Int. Cl. A63b 67/02, 69/36
U.S. Cl. 273—176 FA 14 Claims



A golf practice and game apparatus having at one end of an enclosure a vertical movable screen with a hole therein as a target, and a tee at the other end of the enclosure. The target is movable to several predetermined heights above the playing floor and at each position the height subtends an angle at the tee having a predetermined relation to the loft angle of the face of the particular golf club being used for that position. Electrical switches and cams are provided at the tee place for actuating a motor and moving the target to a given height for a particular golf club used, and also return troughs are provided for the golf balls which identify those that pass through a central portion of the hole, as compared to the side portions thereof.

3,687,458
EXERCISING AND TRAINING TYPE GOLF CLUB
Wayne C. Proctor, Jr., Hyattsville, Md., assignor to McLaughlin Research Corporation, Silver Spring, Md.
Filed June 29, 1971, Ser. No. 157,957
Int. Cl. A63b 69/36, 21/30
U.S. Cl. 273—183 D 7 Claims



The pivoted member at the upper end of the golf club shaft, which is biased outwardly by a compression spring, is adapted

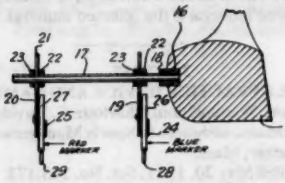
to be squeezed by the uppermost hand of the user and moved against the fixed semi-cylindrical portion of the shaft to provide a generally cylindrical grip portion. If the gripping force exerted by the golfer's hand is not sufficient to compress the spring and force the pivoted member against the shaft, an awkward and uncomfortable grip portion is provided which prevents the golfer from swinging the club in the proper manner.

3,687,459

GOLF SWING TRAINING DEVICE

Herman L. Swords, Route 1, Minford, Ohio

Filed July 23, 1971, Ser. No. 165,519
Int. Cl. A63b 69/36
U.S. Cl. 273—186 D **10 Claims**



A golf swing testing attachment consisting of a bracket which can be attached to the head of a golf club and which carries a pair of spaced depending scribers of different color. The scribers mark an underlying sheet of paper when a practice swing is made, and the relative locations of the scribed tracks indicate the nature of defects in the user's swing. The bracket includes a horizontal arm from which depend resilient legs to which the scribers are attached. The arm may be threadedly secured to an aperture in the club head or to a connecting member which is secured to a strap adapted to be clamped around the club head.

3,687,460

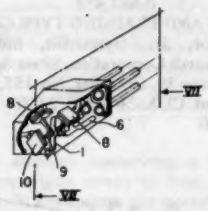
Patent Not Issued For This Number

3,687,461

THREE DIMENSIONAL SOUND RECORDING AND REPRODUCING SYSTEM

Minoru Kamiya, 46-3, 2-chome, Minami-otsuka, Toshima-ku, Tokyo, Japan

Filed Sept. 10, 1969, Ser. No. 856,780
Int. Cl. G11b 3/44
U.S. Cl. 274—38 **3 Claims**



A three-dimensional sound recording and reproducing system for phonograph records comprises a stylus which vibrates in first and second oscillatory modes transversely of a record groove (as in the Westrex system) and in a third mode longitudinally of said groove.

3,687,462

RECORDING ATTACHMENT FOR A PHOTOGRAPH AND THE LIKE

Henry A. Sherwood, Short Hills, N.J., assignor to Lorraine Industries, Inc., Bridgeport, Conn.

Filed Nov. 21, 1969, Ser. No. 878,621
Int. Cl. G11b 3/00, 25/04
U.S. Cl. 274—9 D **15 Claims**

A recording attachment partly self-supporting and partly supported and oriented by the turntable of a regular playback phonograph to permit recording on pre-grooved disks. The attachment includes a recording transducer sound-isolated by rubber grommets or the like and mounted on the same structure with a microphone and an amplifier.

3,687,463

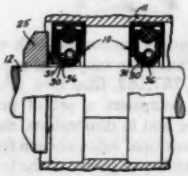
Patent Not Issued For This Number

3,687,464

SEAL

Richard H. Jackson, Downers Grove, and George H. Schulz, Naperville, both of Ill., assignors to Gits Bros. Mfg. Co., Chicago, Ill.

Filed Jan. 4, 1971, Ser. No. 103,470
Int. Cl. F02f 5/00, 9/06
U.S. Cl. 277—153 **15 Claims**



A mechanical seal having a U-shaped cross section annular housing open to the inner diameter. Two opposed J-shaped cross section non-rigid seal members are received in the housing with the bight sections nestled and projecting below the inner diameter of the housing. An O-ring member is disposed in the housing to separate the legs of the J-shaped members and a coil spring or other constricting member is received around the inner diameter of the inner bight section.

3,687,465

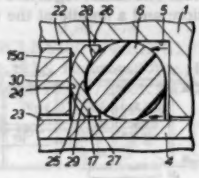
FLUID TIGHT ANNULAR SEALS

Frank L. Grime, Coventry, and Arthur Downs, Kenilworth, both of England, assignors to Keelavite Hydraulics Limited

Filed Jan. 9, 1970, Ser. No. 1,831
Claims priority, application Great Britain, Jan. 10, 1969, 1735/69
Int. Cl. F16j 15/10
U.S. Cl. 277—188 **7 Claims**

A fluid seal of the O-ring type in which extrusion of the O-

ring along the leakage path when under pressure is prevented by means of a support ring of bow-shaped cross-section on the



downstream side of the O-ring between the O-ring and an abutment surface.

3,687,466

Patent Not Issued For This Number

3,687,467

COLLET

Wojciech B. Kosmowski, Covina, Calif., assignor to Digital Systems, Inc.

Filed May 1, 1970, Ser. No. 33,844
Int. Cl. B23b 31/14
U.S. Cl. 279—1 B **5 Claims**

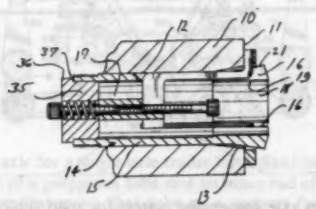
This disclosure relates to machine tools such as drilling machines particularly adapted for drilling on printed circuit boards and the like. In particular, the disclosure is directed to improvements in centrifugally-activated collets for use with rotatable spindles employed in such drilling machines.

3,687,468

SPRING ACTUATED RELEASE OF CONTRACTING COLLET CHUCKS FOR LATHES AND THE LIKE

Don H. Skaben, New Fairfield, Conn., assignor to The Dunham Tool Company, Inc., New Fairfield, Conn.

Filed Oct. 16, 1970, Ser. No. 81,483
Int. Cl. B23b 31/20
U.S. Cl. 279—51 **11 Claims**



The invention relates to improvements in the actuation of collet chucks for lathes and the like. Specifically, the invention provides for a novel and highly simplified, yet effective spring return mechanism for effecting axial movement of a collet chuck, to release a workpiece after a turning operation. The mechanism of the invention is applicable particularly to standard, manually operated turning machines, which are typically provided with a manual facility (a lever or the like) for actuating the collet in a closing direction, but are not functional in opening of the collet. The arrangement of the invention provides a novel spring, which effectively acts between the front face of the lathe spindle and the rear portion of the collet chuck to urge the collet chuck in an axially forward direction and thereby effect release of the workpiece when desired.

3,687,469

METHOD FOR PRODUCING SKI-EDGE

Iwao Wada, 3-9, Hayako-cho Osaka-Fu, Neyagawa-shi, Japan

Filed June 15, 1970, Ser. No. 46,038
Claims priority, application Japan, June 18, 1969, 44/48577
Int. Cl. A63c 5/04
U.S. Cl. 280—11.13 E **6 Claims**

A metal ski-edge composed of a plurality of pressed wire links arranged at an angle with respect to the longitudinal axis of the ski. A method of producing same.

3,687,470

SKI BINDINGS

Donald F. Wilkes, Albuquerque, N. Mex., assignor to Rolamite Incorporated, San Francisco, Calif.

Continuation-in-part of Ser. No. 717,114, March 29, 1968, which is a continuation-in-part of Ser. No. 3,463, Jan. 16, 1970. This application March 18, 1970, Ser. No. 20,646
Int. Cl. A13c 9/00
U.S. Cl. 280—11.35 T **16 Claims**

Ski binding units for fasting a ski boat at the toe and heel of the boat. The toe binding unit applies cantilever loading to the toe of the boot through an abutment which overlaps the toe of the boot. The abutment is hinged to the base which is secured on the ski. A shear wire temporarily prevents the abutment from swinging vertically relative to the base. The heel binding unit supports the heel on roller bearings and yieldably clamps the heel against the bearings by means of a snap action spring blade. The heel unit releases the heel of the boot laterally while the toe pivots about the toe unit, when a predetermined lateral force is applied. Both the toe unit and heel unit are capable of releasing vertically when predetermined forces are applied to the respective units.

3,687,471

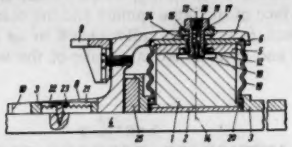
SKI SAFETY BINDING

Reinhold Sommer, Essen, Germany, assignor to Hans Muller, Kettwig, Germany

Filed Aug. 26, 1970, Ser. No. 67,080
Claims priority, application Germany, Aug. 27, 1969, P 19 43 518.8
Int. Cl. A63c 9/00
U.S. Cl. 280—11.35 T **10 Claims**

A ski safety binding for connection to a ski board with heel holding means for clamping the heel of a ski boot, in which

magnetic means supported by base plate means cooperate with a soft iron plate which has connected thereto heel grasping means comprising tongue means for supporting a ski boot



from below and also comprising a clamping member for grasping a ski boot heel from behind and holding the same in position.

3,687,472
SKI CONCEPT

Arthur D. Struble, Jr., 2101 Rosita Place, Palos Verdes Estates, Calif.

Continuation of Ser. No. 696,581, Jan. 9, 1968, abandoned.
This application July 20, 1970, Ser. No. 64,024
Int. Cl. A63c *11/02, 11/22, 5/08*
U.S. Cl. 280—11.37 B **18 Claims**

A new and improved equipment for skiers comprising a pair of ski poles having snow engaging elements adapted to be connected together to hold a pair of skiis and means to fasten the ski poles and the skiis into a compact unit for carrying by a skier. The ski pole handles may include portions of the fastening means and the ski poles and the skiis may be provided with equipment carrying means on the ski poles or the skiis. The skiis may be folding skiis or may be provided with power drive means and the ski poles may have receptacles in their upper ends and may have removable handles.

3,687,473
Patent Not Issued For This Number

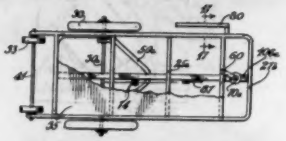
3,687,474
Patent Not Issued For This Number

3,687,475
MERCHANDISE CARTS

Max Wiczer, c/o Wico Corporation, 2913 N. Pulaski Rd., Chicago, Ill.

Filed Sept. 1, 1970, Ser. No. 68,721
Int. Cl. B62b *11/00*
U.S. Cl. 280—36 C **7 Claims**

A hand-propelled cart with side wheels and a rear caster leg foldable under the frame of the cart. The wheels are normally locked in standing position; and a crank handle at the rear is operable in the manner of a winch to first unlock the wheels and then raise them to the folded position, where they become automatically locked. The caster leg is also normally locked in the standing position; and a handle at the rear is operable to

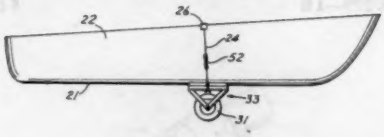


unlock the caster leg and fold it as stated. A depressible plunger for the wheels and one for the caster leg are provided at the rear, and function to unlock these parts, in which event they drop to standing position by gravity and become automatically locked therein.

3,687,476
REMOVABLE DOLLY WHEEL FOR BOAT

Roderic M. Abbott, 920 7 E. Nassau, Denver, Colo.

Filed Sept. 21, 1970, Ser. No. 73,867
Int. Cl. B62b *1/14*
U.S. Cl. 280—47.32 **6 Claims**

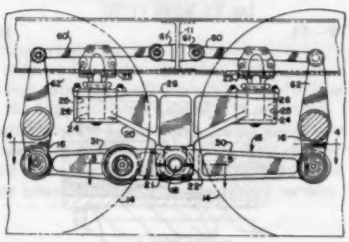


A single-wheeled, cushioned dolly mountable under an automobile-top carried boat for conveniently wheeling the boat from the automobile to the water. This readily dismantled device includes an adjustable cross-member which is adaptable to various size boats and spring loaded cables for securing the boat.

3,687,477
VEHICLE SUSPENSION

Ronald Earl Miller, Rockford, Ill., assignor to Hendrickson Mfg. Co., Lyons, Ill.

Filed Sept. 28, 1970, Ser. No. 76,064
Int. Cl. B60g *5/06*
U.S. Cl. 280—104.5 A **4 Claims**



A tandem axle suspension system for road vehicles such as heavy-duty trucks, trailers, and the like, which is characterized by a pair of longitudinally extending load equalizing beams connecting the ends of the axle assemblies on opposite sides of the vehicle and pivotally mounted on saddle assemblies which are resiliently connected in depending relation with side frame members on the vehicle chassis and the equalizing beams each being formed in two sections with

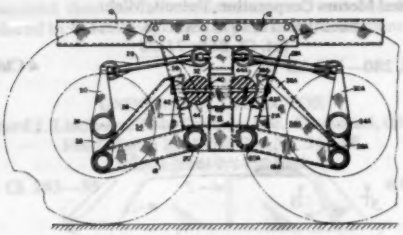
telescoping end portions connected by resilient bushings at two spaced points, one of which coincides with and forms the pivotal connection with the respective saddle assembly.

3,687,478

VEHICLE SUSPENSION SYSTEM

Elwood H. Willetts, 102 S. Penataguit Ave., Bay Shore, N.Y.

Filed March 12, 1971, Ser. No. 123,581
Int. Cl. B60g 5/04
U.S. Cl. 280—104.5 R 5 Claims



A vehicle suspension system having a progressively increasing resistance to deflection, more efficient than prior systems heretofore available is disclosed. The vehicle frame is supported by a pair of oppositely disposed rocker beams having horizontal and vertical components. A plurality of spherically shaped elastomers are supported on a pilot shaft between spherically cupped seats carried by the opposing sides of the rocker beam vertical components. Spacers having spherically cupped faces are positioned between the spherical elastomers on the pilot shaft. Elastomeric bumpers secured to ends of the pilot shaft prevent the rocker beam seats from rebounding outwardly away from the spherical elastomers. This vehicle suspension provides a low frequency deflection ride for the vehicle load over a range of load levels.

3,687,479

WHEEL AXLE FOR SINGLE-AXLE VEHICLE

Kurt Kober, Kleinkotz-Schwaben, Germany, assignor to Kober, Alois Ag Maschinenfabrik, Grosskotz/Schwaben, Germany

Filed March 27, 1970, Ser. No. 23,403
Int. Cl. B60g 11/22
U.S. Cl. 280—124 R 9 Claims

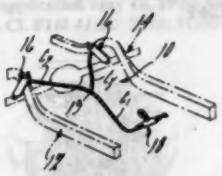
A wheel axle for a single-axle trailer has a fixed axle housing in the form of a polygonal tube and an inner rod of polygonal cross-section traversing that tube as a support for a pair of wheel mounts secured to its ends; the polygon of the outer tube has twice as many corners as that of the inner rod to form therewith a set of pockets of generally triangular profile with obtuse vertex angles receiving elongate , elastically deformable damping strips to enable limited relative rotation between the rod and the tube. The strips may be partly received in surface depressions of the rod.

3,687,480

VEHICLE LEVELING SYSTEM

John H. Fader; Johan H. Keijzer, both of Hasselt, and Marcel J. R. Graulus, St. Truiden, all of Belgium, assignors to Monroe Belgium N.V., St. Truiden, Belgium

Filed June 12, 1970, Ser. No. 45,866
Int. Cl. B60g 17/00
U.S. Cl. 280—124 F 30 Claims



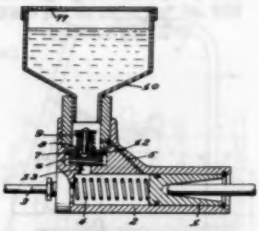
A vehicle leveling system comprising a pair of fluid actuated leveling devices which are adapted to have a supply of pressurized actuating fluid communicated thereto in order to control the relative attitude between the sprung and unsprung portions of a vehicle; the system including a fluid supply assembly which is preferably disposed in the trunk compartment of the associated vehicle and comprises a minimum pressurized valve which assures that a predetermined minimum pressure is maintained in the system, and means for removably receiving portable disposable containers of actuating fluid and means for removing the fluid from the containers and communicating the same to the leveling system in order to effect actuation thereof.

3,687,481

RIDE HEIGHT ADJUSTMENT SYSTEM FOR A MOTOR VEHICLE

Kurt Graef, Cologne, Germany, assignor to Ford Motor Company, Dearborn, Mich.

Division of Ser. No. 762,002, Sept. 24, 1968, abandoned, Continuation of Ser. No. 64,108, July 29, 1970, Pat. No. 3,628,810. This application June 2, 1970, Ser. No. 54,087
Int. Cl. B60g 11/58
U.S. Cl. 280—124 F 7 Claims



A leveling system for maintaining a motor vehicle body at an established height above the ground including a shock absorber with a concentric coil spring. An annular spring seat engages one end of the coil spring and is slidable on the shock absorber. The seat also forms a part of an expansible chamber that may be pressurized to increase the load on the coil spring and compensate for a change in vehicle loading. The system includes a fluid pressure source to pressurize the expansible chamber and a leveling valve assembly for depressurizing the expansible chamber.

3,687,482

Patent Not Issued For This Number

3,687,483

ARRANGEMENTS FOR SENSING AND CORRECTING THE LEVEL OF A BODY

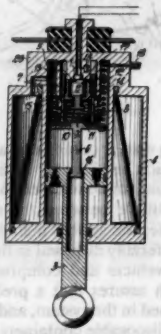
Karl-Heinz Gull, Bruchl-Vochem, and Bernd-Dieter Marke, Finnentrop, both of Germany, assignors to Hoesch Aktiengesellschaft, Dortmund, Germany

Filed Nov. 4, 1970, Ser. No. 86,881

Claims priority, application Germany, Nov. 5, 1969, 19 55 597.6

Int. Cl. B60g 17/04

U.S. Cl. 280—124 F 25 Claims



A level sensor, comprising a magnetically influenced field plate or a magnetically operated switch, is built into the shock absorber to control the flow of hydraulic fluid to, or withdrawal of hydraulic fluid from, a shock absorber. A circuit connected to the sensor output compares the signals to control flow through the hydraulic lines.

3,687,484

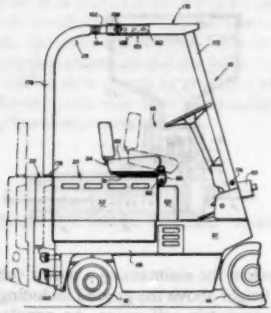
LIFT TRUCK WITH OVERHEAD GUARD AND COUNTERWEIGHT

Henry L. Cosby, Hickory Corners, Mich., assignor to Clark Equipment Company

Filed May 5, 1970, Ser. No. 34,713

Int. Cl. B60r 21/00

U.S. Cl. 280—150 C 6 Claims



A lift truck is shown to exemplify the invention in which a seat support member is pivoted at one side to allow the seat to be swung outwardly of one side of the truck to a non-interfering location relative to a compartment housing the power source apparatus, such as an electric storage battery. A protective overhead guard device includes one pivotable and longitudinally adjustable connector and one longitudinally adjustable connector for adjusting the length of the guard for connection to a longitudinally adjustable and novel counterweight structure at different adjusted positions thereof, thereby enabling the same truck chassis to be utilized for a relatively wide range of lift truck capacities. In addition, the pivoted connector is adapted to provide an opening in the guard structure through which may pass a chain or cable of a lifting and transfer device which, with the pivoted seat structure, provides simple means for performing an efficient method of removing and replacing the power source or other devices without removing or disassembling the overhead guard or seat structure.

3,687,485

OCCUPANT RESTRAINT SYSTEM

David D. Campbell, Bloomfield Hills, Mich., assignor to General Motors Corporation, Detroit, Mich.

Filed Jan. 11, 1971, Ser. No. 105,222

Int. Cl. B60r 21/08

U.S. Cl. 280—150 AB 4 Claims

A deployable trapezoidal shaped net of flexible material is provided for each side window opening of a vehicle body. Each net has a forward edge portion and an upper edge portion respectively secured to the front pillar and roof rail of a respective window opening. Normally the nets are stored in a folded condition above the headlining and adjacent a respective pillar and roof rail. An inflatable cushion is transversely mounted on the roof structure of the vehicle body. Normally the cushion is stored above the headlining. A continuous loop cable is located at each side of the cushion adjacent each roof rail. The cables are stored above the headlining. Each cable is secured at one point to a respective side of the cushion adjacent the lower edge thereof and extends around a pulley secured to a respective roof rail and a one-way pulley secured to a respective rear quarter structure of the body. The lower rear corner of each net is secured to a respective cable at the same point as the respective side of the inflatable cushion. Upon inflation of the cushion from a pressure source located in the roof structure, the cushion is projected downwardly and rearwardly of the body as the cables move around the pulleys. The cables fix the inflated position of the cushion and limit forward movement of the cushion. The cables also deploy the nets over the window openings. The inflatable cushion, the cables, and the nets tear through the headlining along predetermined tear lines when the cushion and nets are deployed.

3,687,486

AUTOMOTIVE SAFETY DEVICE HAVING INFLATABLE CONFINEMENT

Shunji Matsui, 3065, Tomioka-cho, Kanazawa-ku, Yokohama; Yosikazu Hayakawa, 368, Oppama-higashi-cho, Yokohama, and Kenzo Hirashima, 714, Nishiterao, Kanagawa-ku, Yokohama, all of Japan

Filed March 8, 1971, Ser. No. 121,639

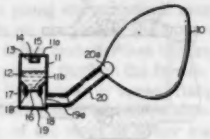
Claims priority, application Japan, Sept. 8, 1970, 45/78728

Int. Cl. B60r 21/06

U.S. Cl. 280—150 AB 3 Claims

An automotive safety device for protecting a vehicle occupant from injury during collision of the vehicle with an obstruction, having an inflatable, normally contracted confinement and a container for storing a source of working media to be converted into pressurized fluid for expanding the confinement, wherein an outlet opening for discharging the pressurized fluid from the container is formed at the lower end of the container and an igniting means for firing an explosive to explosively expand the source of working media into pres-

surized fluid is positioned at the upper end of the container. The safety device features increased velocity of the flow of the



pressurized fluid to the confinement and a reduced noise produced by the blasting of the explosive in the container.

3,687,487

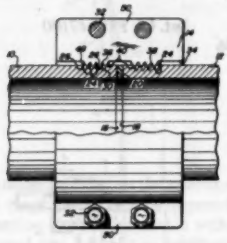
UNIVERSAL CONNECTOR

Edward J. Lindholm, 3044 Daytona Ave., Cincinnati, Ohio

Filed March 23, 1970, Ser. No. 21,645

Int. Cl. F16l 9/14, 21/06

U.S. Cl. 285—55 **6 Claims**



The connector involves a clamping ring having interior grooves and ribs complementing external grooves and ribs of two elements requiring connection; the grooves and ribs each carry camming faces acting to enforce longitudinal movement of the two connectable elements towards one another incident to radial contraction of the clamping ring, whereby a gasket between said connectable elements is subjected to compressive force resulting in an effective seal.

3,687,488

ROD AND CLEVIS ASSEMBLY

Paul C. Tabor, Troy, Mich., assignor to Meteor Research Limited, Roseville, Mich.

Filed March 12, 1971, Ser. No. 123,579

Int. Cl. F16b 7/06

U.S. Cl. 287—59 **2 Claims**

A rod having rolled threads is threaded into a tapered boss on a clevis and a jam nut on the rod has a tapered skirt frictionally embracing the tapered boss to securely lock the nut. Extruded bearing openings in the legs of the clevis provide enlarged bearing surfaces. The boss threads are formed in a clevis blank having a boss opening of substantially the same diameter as the unthreaded rod and the other end of the rod is in the opening of a substantially identical clevis blank and is welded thereto.

3,687,489

Patent Not Issued For This Number

3,687,490

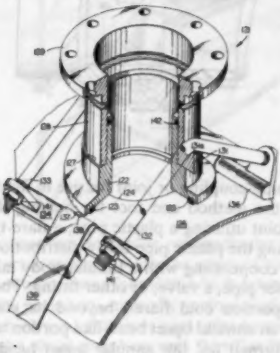
PIPE SADDLE ASSEMBLY

Paul G. Dunmire, Oakland, Calif., assignor to Christy Metal Products Inc., Emeryville, Calif.

Continuation-in-part of Ser. No. 826,563, May 21, 1969, abandoned. This application May 18, 1970, Ser. No. 38,342

Int. Cl. F16l 41/00; F16k 51/00

U.S. Cl. 285—197 **20 Claims**



A pipe saddle assembly employing a flexible strap adapted to be disposed about a pipe into which a branch line is to be made. The saddle assembly includes lugs cooperating with the ends of the band and bolts for drawing the lugs together to tension the band. The bolts ride on fulcrums supported by a boss element to be drawn against the pipe. A seal ring interposed between the boss element and pipe seals against leakage.

3,687,491

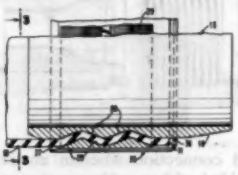
HOSE COUPLING

Don J. Marshall, Edgewater, Md., assignor to Goodall Semi-Metallic Hose & Mfg. Co., Philadelphia, Pa.

Filed Jan. 6, 1970, Ser. No. 958

Int. Cl. F16l 33/02

U.S. Cl. 285—242 **13 Claims**

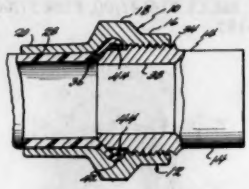


This Patent discloses a hose coupling including a nipple for insertion into a hose, the nipple having circumferentially extending recesses including leading and trailing ramp portions having roughened or serrated surfaces thereon. After insertion of the nipple into the hose, a segmented collar having circumferentially extending projections on the interior thereof, including leading and trailing ramp portions having roughened or serrated surfaces thereon, is positioned to circumscribe the nipple and overlie and press the hose into the recesses. In order to retain or prevent radial disengagement of the collar from the hose, a retaining ferrule is positioned circumferentially of the collar.

3,687,492
SERVICE PIPE COUPLING JOINT

Wilbur R. Leopold; Frank C. Hackman; Carl E. Floren, and Wallace E. Gould, all of Decatur, Ill., assignors to Mueller Co., Decatur, Ill.

Filed Dec. 16, 1969, Ser. No. 885,462
Int. Cl. F16l *33/22, 47/00*
U.S. Cl. 285—247 7 Claims

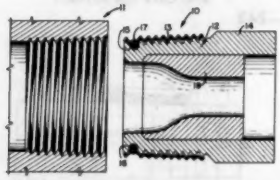


A service pipe coupling or joint for use in fluid distribution systems and the method and tool for making the same, the coupling or joint utilizing a plastic pipe, a flare-type coupling nut for coupling the plastic pipe into a distribution system, the coupling nut cooperating with a tubular body member which may be another pipe, a valve, or other fitting. The plastic pipe has its end portion cold flared beyond its elastic limit or memory into an annular upset bead-like portion terminating in an inwardly turned lip, the annular upset bead-like portion trapping the plastic pipe axially with respect to the coupling nut. The application of the tubular body to form the coupling or joint further forms the bead-like flare to provide a seal and packing and to increase the resistance of pipe pullout from the joint.

3,687,493
THREADED CONNECTION

Everett H. Lock, Houston, Tex., and William C. Maurer, Houston, Tex., assignors to Esso Production Research Company

Filed March 1, 1971, Ser. No. 119,763
Int. Cl. F16l *25/00*
U.S. Cl. 285—333 12 Claims



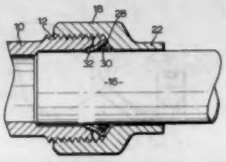
A threaded connection wherein an externally threaded member provided with a rubber gasket and a fluoroplastic protective ribbon is joined to an internally threaded member in a pressure-tight assembly.

3,687,494
COPPER COMPRESSION RING

Elmer Graff, Galt, Ontario, Canada, assignor to Canadian Brass Limited, Galt, Ontario, Canada

Filed Sept. 14, 1970, Ser. No. 71,849
Int. Cl. F16l *17/02*
U.S. Cl. 285—341 4 Claims

A tube coupling consists of an externally threaded body and cooperating nut bearing on an interposed ring which contains

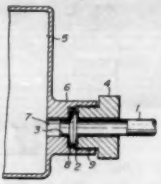


a rubber gasket to provide a seal on compression of the ring by the interaction of the body and the nut.

3,687,495
PIPE JOINT

Toshikazu Sakamoto, Osaka, and Michio Adachi, Toyonaka, both of Japan, assignors to Matsushita Electric Industrial Co., Ltd. and Sakamoto Seiki Kabushiki Kaisha, Osaka, Japan

Filed March 23, 1970, Ser. No. 21,871
Claims priority, application Japan, March 28, 1969, 44/24026
Int. Cl. F16l *17/00*
U.S. Cl. 285—356 1 Claim



A pipe joint in which a bulged portion is formed adjacent to one end of a pipe; said pipe is fitted into a pipe fitting extending from an equipment, and the bulged portion is firmly pressed against the seat formed in the pipe fitting when a locking nut fitted over the pipe is screwed to the pipe fitting. A mechanically locked joint ensuring the complete liquid-tightness can be obtained in a simple manner.

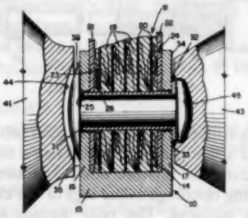
ERRATUM

For Class 287—59 see:
Patent No. 3,687,488

3,687,496
RIVET PANEL FASTENER

Eugene Hindin, 1371 Panther Rd., Rydal, Pa.

Filed May 26, 1971, Ser. No. 147,050
Int. Cl. F16b *5/01, 19/06*
U.S. Cl. 287—189.36 D 1 Claim



A fastener for joining a laminated panel such as plywood to a structural member and to provide a moisture proof connec-

tion therebetween. The fastener includes a ferrule having a hollow shank portion with a transverse flange portion extending from one of the ends. The shank portion is received in aligned holes in the panel and structural member so that the flange portion seats on margins of the hole in the structural member. A rivet or softer material than the ferrule with a head at one of its ends is passed through the ferrule and its opposite end is swaged over the outwardly turned flange of the ferrule to make a flush connection. The hollow shank of the ferrule prevents the shank of the rivet of softer material from upsetting into the relatively soft interior of the panel.

3,687,497

ANGULAR MOUNTING ADAPTER

Walter E. Watson, Livonia, Mich., assignor to Link Industries, Inc., Detroit, Mich.

Filed March 5, 1971, Ser. No. 121,304

Int. Cl. B25g *3/28*; **B23k** *9/28*; **F16b** *9/02, 17/00, 43/00*

U.S. Cl. 287—20.3 **1 Claim**

Means for mounting a device on the apertured support comprising a pair of rings having axially tapered outer surfaces sleeved on a mounting stud of the device with their outer surfaces tapered toward one another in positions to be clamped to the support around the margins of the aperture.

3,687,498

Patent Not Issued For This Number

3,687,499

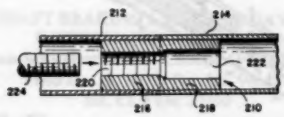
COUPLING DEVICES

Edward C. Guilfoyle, Sr., 1501 Miracle Mile #905, Tucson, Ariz.

Division of Ser. No. 716,720, March 28, 1968. This application Jan. 23, 1970, Ser. No. 8,762

Int. Cl. F16b *13/00*

U.S. Cl. 287—127 R **1 Claim**



A novel alignment element for connecting two tubular members having substantially the same inside diameter is provided. The alignment element comprises a cylindrical member having an outside diameter at one end that can be press fitted into one of the tubular members and an outside diameter at the other end that is slightly smaller to permit a slip fit with the other tubular member. A novel coupler for connecting two tubular members is provided that has end portions each having an outside diameter slightly less than the inside diameter of the tubular member into which they are inserted and a centrally located collar having substantially the same outside diameter as the tubular members.

3,687,500

CONNECTING CONSTRUCTION FOR SHEET MEMBERS

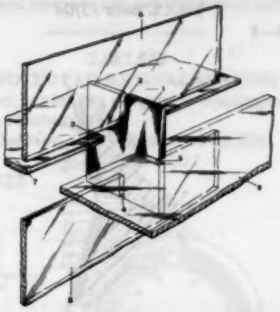
Arthur Aurelius Xaverius Silvius, 34, Leerdamseweg, Asperen, Netherlands

Filed Feb. 9, 1970, Ser. No. 9,732

Claims priority, application Netherlands, Feb. 18, 1969, 6902537

Int. Cl. F16b *5/06*

U.S. Cl. 287—189.36 D **5 Claims**



For interconnecting mutually perpendicular sheet members, connectors are spaced along the edges of such members, each connector comprising four slots which extend radially inwardly from the periphery, mutually enclose angles of 90°, and have widths which tend at least in part to be narrower than the thickness of the sheet members and thus flexibly clamp the same. Each connector may be formed as a one piece plate of rigidly flexible and deformable material; or have one or more plates of flexible material between and deformable by adjustable clamping plates of stiffer material; or may be built up of a number of uniform plates of stiff material interconnected by pins of flexible deformable material extending through holes in such plates, the holes in one plate being staggered with respect to the holes in adjacent plates.

3,687,501

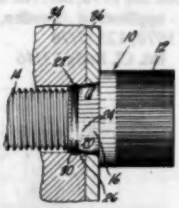
NON-ROTATABLE FASTENER

Charles A. Wilson, Rte. 1, Box 355, Williamstown, N.J., and Joseph P. Villo, 1432 Autumn Road, Jenkintown, Pa.

Filed Dec. 31, 1969, Ser. No. 889,546

Int. Cl. F16b *5/02*

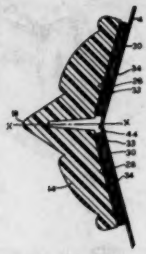
U.S. Cl. 287—189.36 F **5 Claims**



A rotation resistant fastener for use in securing a plurality of members together includes a generally smooth shank portion having a plurality of radially projecting lobes extending lengthwise along the shank portion. Each lobe is arcuate throughout substantially its entire arc length and includes a high point of maximum radial projection located between a pair of low points of minimum radial projection. At one lengthwise end of each lobe there is an additional radial protrusion or bump that follows the contour of the lobe except that it projects further in a radial direction. In use, the fastener is inserted into aligned apertures in the members to be joined so that the radial bump urges the material around the apertures forwardly along the length of the hole and outwardly

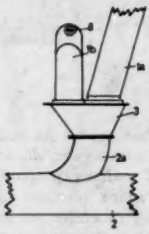
around the hole. The displaced material thereafter springs back toward its original position and packs around the lobes on the shank.

3,687,502
BUMP-PROTECTION MOLDING
Theodore Loew, Schenectady, N.Y., assignor to The Standard Products Co., Cleveland, Ohio
Filed June 8, 1970, Ser. No. 44,212
Int. Cl. B60r 13/04
U.S. Cl. 293—1 3 Claims



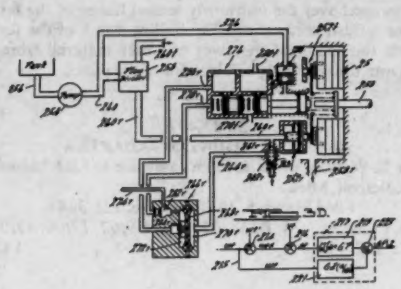
The disclosure is of a molding in the form of a V, wherein the vertex of the V extends outward from the panel which the molding protects. The legs or free ends of the V are secured to the panel which is to be protected, and toward that end, opposed flanges extending outward are secured to the free ends of the V and are provided with a pressure sensitive adhesive to cause the molding to adhere to the panel. The body of the molding is formed with a cavity between the legs of the V in order that the molding may be flexible about an axis of symmetry passing through the vertex of the V. Either or both flanges on the vertex side of the V can be and preferably are provided with a decorative strip. The axial thickness of the body at the vertex is roughly one-third of the total thickness of the molding from the outer extremity of the vertex to the surface of the panel to which it is secured.

3,687,503
SYSTEM FOR PNEUMATIC TRANSFER OF GOODS
Per-Olof Ekstrom, Johanneshov, and Hans Hyden, Stockholm, both of Sweden, assignors to AB Centralsug, Solna, Sweden
Filed Oct. 28, 1970, Ser. No. 84,885
Claims priority, application Sweden, Oct. 29, 1969, 14795/69; Sept. 15, 1970, 12577/70
Int. Cl. B65g 53/46
U.S. Cl. 302—39 7 Claims



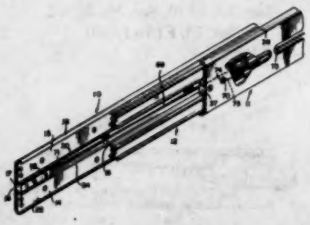
A system for pneumatic transfer of goods, in particular garbage from each of a plurality of vertical disposal chutes to a main collecting tube for delivery to a handling central via periodically operated valves, two such chutes being attached to one such valve.

3,687,504
SKID CONTROL SYSTEM
Hugh E. Riordan, Ann Arbor, Mich., assignor to Kelsey-Hayes Company, Romulus, Mich.
Filed Aug. 3, 1970, Ser. No. 60,273
Int. Cl. B60t 8/08, 8/10
U.S. Cl. 303—21 F 27 Claims



A braking system including a skid control system, in which the brakes are actuated from a source of hydraulic power with the magnitude of pressure to the brakes being varied generally as a function of the input force from the vehicle operator and; during controlled operation, as a function of the magnitude of an error signal indicative of an incipient skid or excessive slip condition. The pressure is varied by a valve system including a pilot valve receiving hydraulic pressure from the source of hydraulic power which is actuatable by the vehicle operator and by an electromotive means responsive to the error signal to provide hydraulic pressure variations over a first predetermined range of pressures. The valve system further includes a main valve connected to the actuators for the brakes which is responsive to the first range of pressures from the pilot valve so as to provide hydraulic pressure variations over a greater range of pressures for operating the brakes.

3,687,505
SLIDE WITH SYNCHRONIZING CABLE DRIVE
Maxwell S. Fall, and Ronald D. Lambert, both of Indianapolis, Ind., assignors to Herbert S. Fall, Indianapolis, Ind.
Filed June 11, 1971, Ser. No. 152,250
Int. Cl. F16c 29/00
U.S. Cl. 308—3.8 14 Claims



A drawer slide structure in which two mating slide rails oppositely enclose an intermediate element which carries a roller registering with the transversely-central regions of the rails, a cable being anchored to one end of one rail, extending around the roller and being tautly anchored to the corresponding end of the other rail, and another cable being anchored to the opposite end of the other rail, extending around a roller and being tautly anchored to the opposite end of the one rail, all to provide an affirmative driving connection among the parts such that, if one rail is held stationary and the other rail is moved longitudinally in either direction, the intermediate element will be moved in the same direction and at one-half the velocity of the moving rail. In one form of the invention, there

may be a single roller for both cables, in another form there may be two rollers on a common axis, but in the preferred form there are separate rollers on separate axes, each axis being spaced as far as possible from its cable anchorage when the structure is fully collapsed.

3,687,506

FLUID PAD BEARING

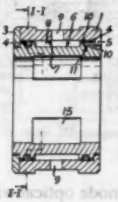
Colin William Dee, "Green Acres," 64 Cranford Bottom, Colehill, Wimborne, England

Filed March 8, 1971, Ser. No. 121,864

Claims priority, application Great Britain, March 9, 1970, 11,130/70

Int. Cl. F16c *17/16*

U.S. Cl. 308—9 10 Claims



A fluid pad bearing member has a housing, at least three pad elements disposed in a circumferential assembly with external radial clearance in the housing, each pad element having an internal bearing surface adapted to coact with a cylindrical journal to define a bearing volume, and each pad element being pivotable as a two-arm lever about an axis substantially parallel to the axis of rotation of the bearing. The assembly of pad elements includes a plurality of circumferentially-spaced fluid intake slots each opening at their inner end into the bearing volume, said slots having a greater cross-sectional dimension in axial direction and a lesser cross-sectional dimension in the circumferential direction, and means are provided for resiliently loading the pad elements inwardly with respect to the housing.

3,687,507

Patent Not Issued For This Number

3,687,508

Patent Not Issued For This Number

3,687,509

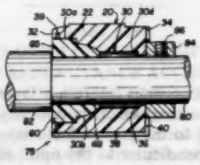
SHAFT BEARING ASSEMBLY HAVING INTERCHANGEABLE PARTS

Max Norman Schweizer, 110 S. Clinton Ave., Bay Shore, N.Y.

Filed Dec. 9, 1970, Ser. No. 96,482

Int. Cl. F16c *23/00*

U.S. Cl. 308—72 6 Claims



A shaft bearing assembly includes a housing having a body portion formed with an axial bore having sections of different diameters to receive shaft bearing inserts of different diameters. One bearing insert is spherically curved and acts as a self-aligning bearing for a shaft rotatable therein. A retainer ring and socket ring insert are provided for the self-aligning insert. Another insert is formed with a curved abutment to serve as an end thrust bearing for the shaft engaged in the self-aligning bearing. A further insert has both spherical and cylindrically curved portions to seat in the housing without other retainer members. The housing and insert may be made of a molded resin material and have smooth, self-lubricated surfaces.

3,687,510

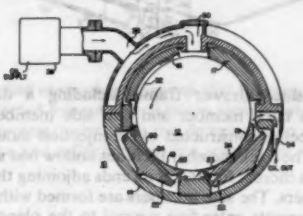
PIVOTED PAD JOURNAL BEARING

Glenn D. Cooper, Irwin, Pa., assignor to Westinghouse Electric Corporation, Pittsburgh, Pa.

Filed Nov. 12, 1970, Ser. No. 88,606

Int. Cl. F16c *17/03*

U.S. Cl. 308—122 5 Claims



A journal bearing for severe loads is provided with pivoted load pads in the lower half and a viscosity pump in the upper half to provide a cooling fluid. The upper half may have a fixed sleeve type surface or may also comprise pivoted pads. The design provides dynamic stability and also overcomes temperature limitations of previous pad bearing designs.

3,687,511

DEVICE FOR INFINITELY VARIABLE ADJUSTMENT OF THE PLAY OF AN ANTIFRICTION BEARING FOR A SPINDLE OR THE LIKE

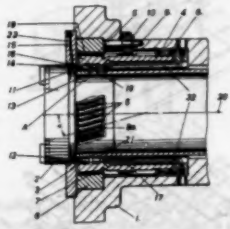
Karl Spauschus, Weitramsdorf, and Brotoharsojo Darmawan, Coburg, both of Germany, assignors to Werkzeugmaschinenfabrik Adolf Waldrich Coburg, Coburg, Germany

Filed Jan. 20, 1971, Ser. No. 107,945

Claims priority, application Germany, Jan. 23, 1970, P 20 02 899.3

Int. Cl. F16c *19/14*

U.S. Cl. 308—207 12 Claims



A device for varying the adjustment of the clearance or play in an antifriction bearing for a machine tool spindle. A sleeve is mounted for both a rotatable and axial movement in a spindle housing. The inner surface of the sleeve has an outer race for a plurality of first rolling bodies. The outer surface of the sleeve adjacent the outer race has a conical shape. A plurality of second rolling bodies are guided obliquely on the conical outer surface at an angle to the axis of rotation of the sleeve. A member having an inner conical surface thereon is secured to

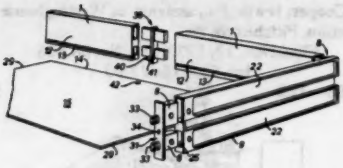
the spindle housing and defines the outer race for the second rolling bodies. A rotation of the sleeve will effect an axial movement thereof to change the spacing between the inner and outer conical surfaces.

3,687,512

DRAWERS FOR FURNITURE

Leslie W. L. Alston, 9, Old Market Place, Sudbury, Suffolk, England

Filed July 14, 1969, Ser. No. 841,341
Int. Cl. A47b *88/00*
U.S. Cl. 312—330 **3 Claims**



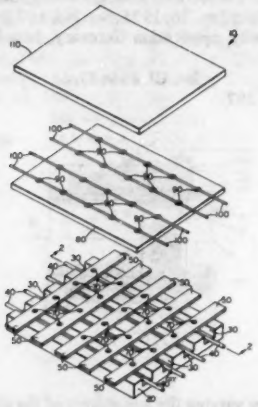
A four-sided drawer frame including a drawer front member, a back member and two side members, all such members being constructed of an injection moulded plastic material. The back member includes hollow box sections having cavities therein formed at its ends adjoining the respective side members. The side members are formed with ribbed connecting elements extending normal to the plane of the side members, and received in the cavities of the box sections for joining together the drawer back and the side members. The opposite end of each side member is formed with a hollow box section for receiving therein ribbed connecting elements provided opposite the box section on the inner wall of the drawer front member.

3,687,513

METHOD OF AGING A DISPLAY PANEL

George E. Holz, North Plainfield, N.J., assignor to Burroughs Corporation, Detroit, Mich.

Filed March 24, 1971, Ser. No. 127,458
Int. Cl. H01j *9/38*
U.S. Cl. 316—20 **8 Claims**



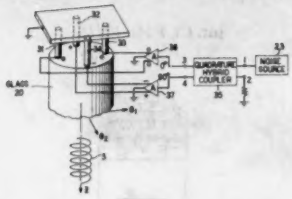
The method comprises assembling the various parts of a display panel made up of rows and columns of tiny dot-like display cells and including elongated anode and cathode electrodes, filling the panel with the desired gas, and then aging the panel by turning on all of its cells in a sequential pattern and with the panel held at an elevated temperature.

3,687,514

REDUCTION OF DISPERSION IN MULTIMODE WAVEGUIDE

Stewart Edward Miller, Middletown Township, Monmouth County, and Stewart David Personick, Long Branch, both of N.J., assignors to Bell Telephone Laboratories Incorporated, Murray Hill, N.J.

Filed Sept. 25, 1970, Ser. No. 75,383
Int. Cl. G02b *5/14*
U.S. Cl. 350—96 WG **4 Claims**



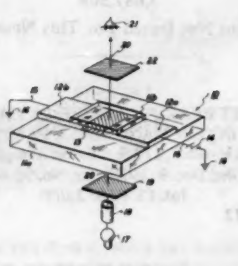
Dispersion in multimode optical waveguides is due primarily to the fact that the different modes propagate at different group velocities. Traditionally, the approach has been to try to minimize mode conversion and, thereby, to avoid the associated dispersive effect. An alternative approach is now suggested which deliberately increases the mode conversion opportunities along the wavepath such that the energy is forced to propagate an equal length of time in all the different modal configurations. This has the unexpected effect of reducing the dispersion since all the energy tends to arrive at the output more nearly at the same average time.

3,687,515

ELECTRO-OPTIC LIQUID CRYSTAL SYSTEM WITH POLYAMIDE RESIN ADDITIVE

Werner E. L. Haas, Webster; James E. Adams, Ontario, and John B. Flannery, Jr., Webster, all of N.Y., assignors to Xerox Corporation, Stamford, Conn.

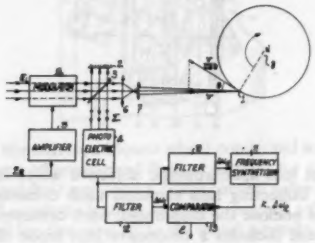
Filed Jan. 6, 1971, Ser. No. 104,328
Int. Cl. G02f *1/26, 1/16*
U.S. Cl. 350—150 **23 Claims**



An electro-optic system wherein a layer of nematic liquid crystalline composition which is optically uniaxial with the optic axis normal to the plane of the layer has an electrical field applied perpendicular to the optic axis of the composition layer thereby inducing optical biaxiality in the composition layer. Electro-optic cells and imaging systems are disclosed using the optic retardation accompanying a field induced change from the uniaxial to the biaxial state.

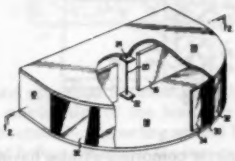
3,687,516
Patent Not Issued For This Number

3,687,517
DOPPLER EFFECT FREQUENCY MONITORING SYSTEM
Henri Brun, Paris, France, assignor to Thomson-CSF
Filed July 22, 1970, Ser. No. 57,069
Claims priority, application France, July 31, 1969, 6926312
Int. Cl. G01p *3/36*
U.S. Cl. 356—28 **11 Claims**



The present invention relates to the controlling or piloting of the frequency of a radio oscillator, by a quantum oscillator, or vice-versa. The object of the invention is a Doppler effect comparator device comprising means for modulating the optical oscillation produced by the quantum oscillator at a frequency generated by a radio oscillator. Interferometric means are provided in order to heterodyne said modulated wave with the modulated wave reflected by a moving obstacle. This technique makes it possible to substitute for the comparison of the frequencies received by the comparator, the comparison of the Doppler frequencies which result.

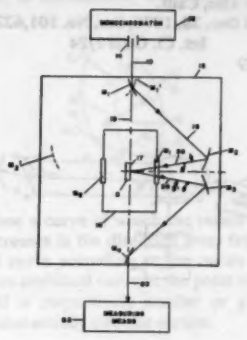
3,687,518
SELF-SLITTING SPECTROSCOPE
Ralph G. Steinhardt, Box 9716, Hollins College, Va., and Julia W. Calhoun, 326 Melrose Lane, Tryon, N.C.
Filed March 23, 1971, Ser. No. 127,251
Int. Cl. G01j *3/00*; G09b *23/06*
U.S. Cl. 356—74 **9 Claims**



A self-slitting spectroscope comprising a narrow source along the axis of a hemi-cylindrical transmission grating of very large size to permit simultaneous viewing of spectral phenomena by a large number of observers.

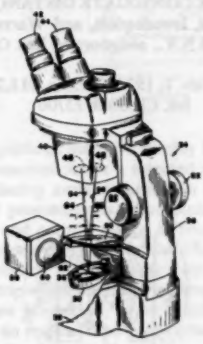
3,687,519
SEMI-MICRO ABSOLUTE TRANSMITTANCE AND SPECULAR REFLECTANCE ACCESSORY FOR SPECTROPHOTOMETERS
James E. Mapes, Rockaway, N.J., assignor to The United States of America as represented by the Secretary of the Army
Filed Feb. 24, 1971, Ser. No. 118,260
Int. Cl. G01j *3/42*; G01n *21/48*
U.S. Cl. 356—96 **5 Claims**

This invention relates to an improved accessory for spectrophotometers having a plurality of reflecting means some of which are fixed and others exactly repositionable; all of such reflecting means are mounted upon a platform which can be kinematically positioned intermediate to a monochromatic



light source and measuring means so that the monochromatic beam is reflected toward a semi-micro sample, which may be held in a cryostat, permitting the determination of absolute transmittance and reflectance over a wide range of temperatures.

3,687,520
SUBSTAGE ILLUMINATING MIRROR FOR A STEREOMICROSCOPE
Paul E. Nothnagle, Rochester, and Harold E. Rosenberger, Brighton, both of N.Y., assignors to Bausch & Lomb Incorporated, Rochester, N.Y.
Continuation of Ser. No. 788,456, Jan. 2, 1969, abandoned.
This application Feb. 19, 1971, Ser. No. 117,140
Int. Cl. G02b *21/06*
U.S. Cl. 350—87 **10 Claims**

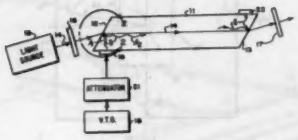


An illuminating mirror for use in the substage of a stereomicroscope is described including a glass-wedge having the front surface coated to partially reflect and partially transmit an incident beam of light. The rear surface of the wedge is coated to be totally reflective from both sides. Therefore, the transmitted and refracted beam is reflected back through the front surface to form a second beam oblique to the former reflected beam. The two beams are then used to individually illuminate the two optical axes of the stereomicroscope. A diffusing reflector may be provided on the other side of the mirror which also utilizes the totally reflective rear surface of the wedge.

3,687,521
ELECTRONICALLY TUNABLE ACOUSTO-OPTIC FILTER HAVING IMPROVED LIGHT AND ACOUSTIC WAVE INTERACTION

John A. Kusters, San Jose, Calif., assignor to Hewlett-Packard Company, Palo Alto, Calif.

Filed Dec. 28, 1970, Ser. No. 101,622
Int. Cl. G02f 1/24
U.S. Cl. 350—149 24 Claims

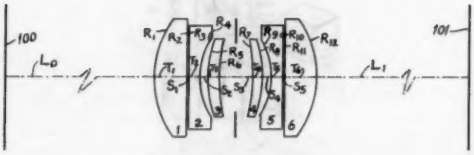


An electronically tunable acousto-optic filter is provided wherein an optical wave is diffracted by an acoustic wave in a birefringent crystalline medium from a first polarization into an orthogonal second polarization. Both the optical wave and the acoustic wave are transmitted through the birefringent crystalline medium along a path for which the phase and group velocity vectors of the acoustic wave are non-collinear. The input to the filter is formed so that the group velocity vector of the acoustic wave is aligned with the velocity vector of the optical wave in the birefringent crystalline medium, which may be positioned in a fluid bath to optimize the optical transmission path through the medium. Both the acoustic wave and the optical wave may be transmitted through another medium before entering the birefringent crystalline medium to properly align the group velocity vector of the acoustic wave and the velocity vector of the optical wave.

3,687,522
VARIABLE MAGNIFICATION LENS SYSTEM FOR FINITE CONJUGATE DISTANCES

Geraldine B. Lynch, Irondequoit, and Warren A. Carlough, Brighton, both of N.Y., assignors to Ilex Optical Co., Inc., Rochester, N.Y.

Filed Feb. 1, 1971, Ser. No. 111,255
Int. Cl. G02b 15/00
U.S. Cl. 350—184 19 Claims

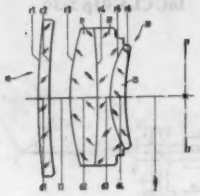


A variable magnification lens system particularly useful for process camera work, for copying work, and for general finite conjugate work, such as in microfilming, oscillography, and related fields. Six elements, all air spaced, form a symmetrical lens of the inverse Gauss type. By moving elements 1 and 2 in opposite directions relative to stationary element 3 (identical movements simultaneously taking place with respect to elements 6, 5, and 4 in the rear half of the lens) and by moving the entire lens assembly as a whole in an axial direction, the magnification may be varied while maintaining a constant total distance from object to image.

3,687,523
EIGHT-LENS APOCHROMATIC OBJECTIVE

Franz Schlegel, and Josef Graf, both of Munich, Germany, assignors to Optische Werke G. Rodenstock, Munich, Germany

Filed Oct. 12, 1970, Ser. No. 80,103
Claims priority, application Germany, Oct. 10, 1969, P 19 51 148.9
Int. Cl. G02b 9/58
U.S. Cl. 350—220 5 Claims

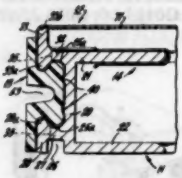


An eight lens apochromatic objective which includes two cemented collecting lens elements each consisting of three lenses that enclose the diaphragm; each cemented collective lens element includes a biconcave lens made of short flint glass in the center adjoined by two further lenses; each three-component and cemented collective element is adjoined at predetermined spacing by a single meniscus lens, these two single lenses enclosing a three-lens cemented collective lens elements; the collective lenses enclosing the short flint biconcave lens are made from glasses with long-crown properties, whereby one of these collective lenses brings about the apochromatic correction for the blue color and the other for the red color.

3,687,524
GLASSLESS MIRROR

Eugene Martinez, Irvington-on-Hudson, N.Y., assignor to Kamor Products, Inc., Irvington-on-Hudson, N.Y.

Filed Jan. 6, 1971, Ser. No. 104,241
Int. Cl. G02b 7/18, 5/08
U.S. Cl. 350—288 9 Claims



This glassless mirror comprises a frame having grooves at its outer sides receiving a reflective sheet held in stretched condition by a flexible strip pressing the sheet into the grooves. The frame may be made of one extrusion having milled out or mitered corner angles to allow bending the extrusion into polygonal shape. A spring clip retains the meeting ends of the frame in alignment.

The flexible strip is so shaped that it can easily be pressed into the groove and allowed to expand to hold the sheet in the groove.

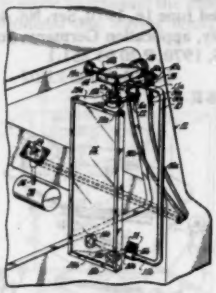
3,687,525
REMOTE CONTROLLED MIRROR

Victor D. S. Riccio, 7722 Atlantic Ave., Cudahy, Calif.

Filed Nov. 17, 1970, Ser. No. 90,352
Int. Cl. G02b 5/08; B60r 1/06
U.S. Cl. 350—289 2 Claims

A pneumatically powered apparatus is provided for rotating a vehicular side view mirror through control mechanism

located within the vehicle. The apparatus includes a frame mounted on the side of the vehicle, means associated with the frame for pivotally supporting the mirror, a gear train associated with the frame provided with an input shaft and output shaft, means responsive to the rotation of the output shaft



for rotating the mirror, a blower wheel connected to the input shaft, a source of pressurized fluid, a conduit for connecting the pressurized fluid source to a 3-way control valve within the vehicle, and conduits leading from the control valve to the blower wheel for directing air to the wheel whereby such may be rotated in a selected direction.

3,687,526

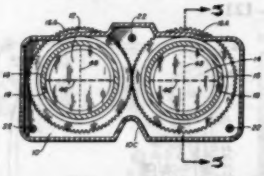
Patent Not Issued For This Number

3,687,527

METHOD AND APPARATUS FOR EXERCISING THE OCULOMOTOR ACCOMMODATION MECHANISM OF THE EYES

Harian P. Blaine, 103 Catron St. Apartment 46, Santa Fe, N. Mex.

Filed Dec. 21, 1970, Ser. No. 100,124
Int. Cl. A61b *3/00*
U.S. Cl. 351—39 **8 Claims**



A method and apparatus for exercising the oculomotor accommodation mechanism of the human eye, the apparatus having a frame rotatably supporting spaced lenses and adaptable to be placed before the eye of the user so that the user sees through the lenses to perceive objects there beyond, each lens having a curvature in a first meridian and a curvature in a second meridian perpendicular to the first, the curvatures in the two meridians differing by a power in the range of 0.12 to 8.0 diopters.

3,687,528

OPHTHALMIC LENSES WITH A PROGRESSIVELY VARYING FOCAL POWER

Bernard F. Maitenaz, Joinville-Le-Pont, France, assignor to Societe Des Lunetiers, Paris, France

Filed Sept. 8, 1970, Ser. No. 70,405
Claims priority, application France, Sept. 11, 1969, 6930906; Feb. 9, 1970, 7004474
Int. Cl. G02c *7/06*
U.S. Cl. 351—169 **9 Claims**

Ophthalmic lens having a progressively variable focal power and comprising a refracting surface consisting at least partly of a surface having an umbilical curve, so called progression umbilical curve, along which the radius of curvature evolves so as to provide the desired progressive variation of the focal power of said lens, wherein the section of said refracting surface taken along a plane orthogonal to the umbilical curve, for a specific plane, is substantially a circle, and for any other

orthogonal plane a curve of which the radius of curvature increases or decreases in the direction away from said progression umbilical curve according as the radius of curvature of said progression umbilical curve at the point of the orthogonal plane involved is respectively smaller or greater than the radius of the substantially circular section.

ERRATUM

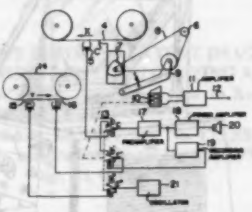
For Class 352—8 see:
Patent No. 3,687,560

3,687,529

APPARATUS FOR PRESENTING AUDIO AND VISUAL INFORMATIONS

Takeshi Goshima, and Yasutaka Iwawaki, both of Tokyo, Japan, assignors to Canon Kabushiki Kaisha, Tokyo, Japan

Filed Jan. 15, 1971, Ser. No. 106,712
Claims priority, application Japan, Jan. 20, 1970, 45/5582
Int. Cl. G03b *31/02*
U.S. Cl. 352—27 **7 Claims**



Apparatus capable of selective display in sequence of a series of visual presentations or a selected still visual presentation and reproducing audio information associated with the displayed visual presentations or presentation, comprising a projector head, and control means to present continuously a series of pictures or a still picture, and a magnetic sound head adapted to reproduce audio signals from a magnetic sound track of a film strip when the latter is transported for continuous series picture projection, or to transfer the reproduced audio signals to an endless tape for playback when the film is stopped for still picture projection.

3,687,530

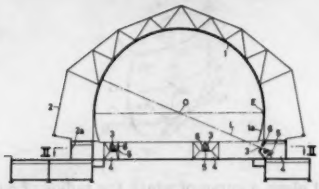
APPARATUS FOR PROJECTING HEMISPHERICAL MOTION PICTURES

Toshio Watanuki, Tokyo, Japan, assignor to The Midori-Kai Co., Ltd., Osaka, Japan

Filed March 15, 1971, Ser. No. 123,997
Claims priority, application Japan, Nov. 30, 1970, 45/105695
Int. Cl. G03b *37/04*
U.S. Cl. 352—71 **5 Claims**

An apparatus for projecting hemispherical motion pictures includes a hemispherical screen truncated below its equator

and a plurality of equidistantly spaced projectors positioned along the lower periphery of the screen. Each projector is positioned within a projection room having a projection window of generally triangular shape, and a mask is positioned



over each window. Each mask has an opening which has substantially the same contour as the contour of the window but which is sized slightly smaller than the window to define a projection ray transmitting portion between the periphery of the projection window and the periphery of the mask opening.

3,687,531

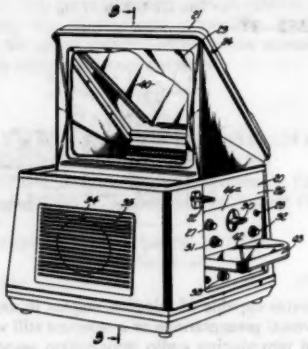
CARTRIDGE FOR CONTINUOUS LOOP FILM

Mitchell J. Bogdanowicz, 435 W. 57th St., New York, N.Y.

Division of Ser. No. 686,036, Nov. 28, 1967, Pat. No. 3,545,851. This application Nov. 24, 1970, Ser. No. 92,475

Int. Cl. G03b *23/02, 31/00*

U.S. Cl. 352—72 **4 Claims**



A cartridge for storing motion picture film having a sound track thereon, the film being disposed in a continuous loop. The film is moved past a sound reproducing device and subsequently past a picture projecting gate. The film moves past the sound reproducer in a plane parallel to a plane tangential to the film loop and past the picture gate at right angles thereto. The film is positively driven by a pair of sprocket wheels disposed ahead of and beyond the picture gate. The film is tensioned ahead of the sound reproducer by two spring-biased idler rollers between which an idler drum may be forced, the latter being mounted on the film projector. A clutch, connected with the projector power source, and springs for orienting the cartridge in the projector housing are also provided. The springs orient the cartridge so that the sprocket wheel and clutch are disengaged when the cartridge is fully inserted in the projector housing. A manually operable device is provided to move the cartridge from its initially oriented position to an operating position with the sprocket wheel engaging the clutch.

3,687,532

CINEMATOGRAPHIC BROAD SCREEN RECORDING AND PROJECTION METHOD AND A FILM CARTRIDGE FOR CARRYING OUT THE METHOD

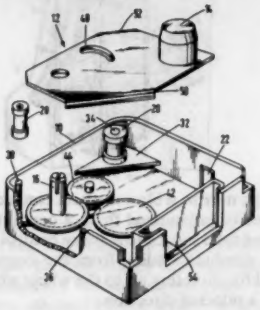
Manfred Suss, Munich, Germany, assignor to Kinag GmbH, Zug, Switzerland

Filed June 16, 1970, Ser. No. 46,627

Claims priority, application Germany, June 23, 1969, P 19 31 828.6; Feb. 5, 1970, P 20 05 251.1

Int. Cl. G03b *23/02*

U.S. Cl. 352—78 R **2 Claims**



A cartridge for unsplit double track film has the supply core and take-up core arranged to slide in guides automatically without a positive drive. A roller is journalled at the corner of the housing adjacent the take-up core to support the film coil on the winding core irrespective of the coil diameter. The wound film lifts itself over the roller in the guide and presses the core of the supply coil back automatically.

3,687,533

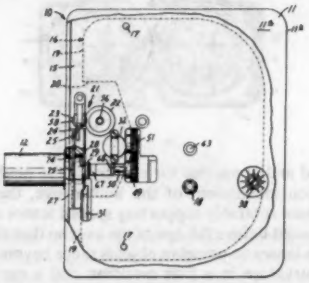
SEQUENCE CAMERA

Richard Alan DeVries, New Brighton, Minn., assignor to Minnesota Mining and Manufacturing Company, St. Paul, Minn.

Filed Feb. 2, 1970, Ser. No. 7,529

Int. Cl. G03b *17/46*

U.S. Cl. 352—121 **10 Claims**



A compact self-contained sequence camera is adapted to be loaded with film by insertion of a film cartridge.

3,687,534

STEREOSCOPIC VIEWING EQUIPMENT

Jacques Waldruche de Montremy, Rueil-Malmaison, France, assignor to Societe Francaise d'Optique et de Mecanique S.F.O.M., Rueil-Malmaison, France

Filed Dec. 5, 1969, Ser. No. 882,621

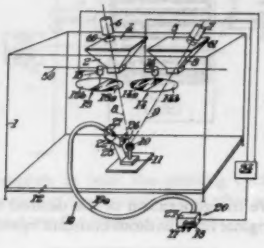
Claims priority, application France, Dec. 12, 1968, 68177038

Int. Cl. G03b *21/00*

U.S. Cl. 353—7 **2 Claims**

A stereoscopic viewing instrument has a screen movable parallel and perpendicular to its support base. Two optical

projectors project a stereoscopic pair of photographs on to the screen, the projectors being possibly coupled with a pair of shutter devices. To enable an observer to view the projected images from unrestricted positions, between the observer and the screen are interposed a bundle of transparent glass fibers forming a light-wave guide to transmit the images to an enclosure on to a synchronized disc having equal deflecting and



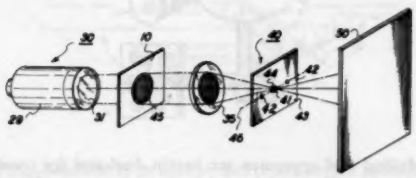
transmitting sectors therein. A mirror and eyepiece direct the respective beams into the observer's fields of view. The projectors and eyepieces may have corresponding associated color filters. Alternatively, the light-wave guide may be replaced by a television circuit having a camera fixed to the screen and a receiver, with a pair of perpendicular revolving opaque plates or color filters synchronized with respective shutter devices.

3,687,535

OPTICAL DEMODULATION SYSTEM

John C. Heurtley, Webster, N.Y., assignor to Xerox Corporation, Rochester, N.Y.

Filed Feb. 13, 1970, Ser. No. 11,251
Int. Cl. G03b *21/14*
U.S. Cl. 353—20 **11 Claims**



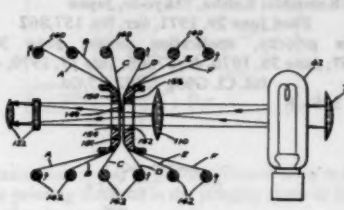
Optically screened input information is recorded as excursions on the surface of a thermoplastic film. The excursions basically consist of a periodic carrier wave and a modulating signal containing the input information. Highly coherent light is directed incident upon the image bearing surface whereby the signal modulated deformations thereon cause the light to become diffracted. The diffracted light is then passed through a projection system including a spatial filter which is positionable in the focal plane of the system. The filter comprises a thin opaque mask having two clear apertures therein, which, when the mask is positioned in the systems focal plane, are coincident with the two first diffracted order focal spots, the two apertures being of a size capable of passing the modulated side bands of the input signal. The mask also has a third aperture centered about the optical center line of the system and being of a size such that the Airy disc of the zero diffracted order just fills, or preferably, slightly more than fills the central aperture when the two first diffracted order focal spots are centered in the other two apertures. The optical path length of one of the light beams passing through the filter is retarded in relation to the other beams whereby interference between the light beams is produced at the scan plane of the system.

3,687,536

MULTI-FILM PROJECTOR

Richard L. Gorrell, Angola, and Harold F. Gibson, Pleasant Lake, both of Ind., assignors to Kickshaw, Inc., Pleasant Lake, Ind.

Filed Jan. 19, 1970, Ser. No. 3,632
Int. Cl. G03b *21/26*
U.S. Cl. 353—35 **9 Claims**



A housing supports illuminating and lens means therein. A plurality of selectively operable film drive knobs extend from the housing and include inner driving ends. A self-contained cartridge includes a plurality of films each of which is mounted between a pair of upper and lower film spools. The pairs of upper and lower film spools are drivingly interconnected by a flexible endless drive belt, and each of the upper spools is engageable with the inner driving end of a respective one of said knobs whereby the films can be selectively operated from the exterior of the housing.

3,687,537

Patent Not Issued For This Number

3,687,538

APPARATUS FOR EXPOSING LATENT IMAGE MARGINS IN ELECTROPHOTOGRAPHIC COPYING APPARATUS

Seiji Matsumoto, Asaka, Japan, assignor to Xerox Corporation, Stamford, Conn.

Filed Aug. 23, 1971, Ser. No. 173,889
Claims priority, application Japan, Sept. 3, 1970, 45/77450
Int. Cl. G03g *15/22*
U.S. Cl. 355—3 **8 Claims**

Apparatus for obtaining electrophotographic copies of improved quality and appearance in which a rectangular frame member is disposed adjacent the photoreceptor circumscribing an area on the photoreceptor onto which the images to be reproduced are projected. The frame member includes an internal channel opening downwardly onto the surface of the photoreceptor. Corona discharge means are supported in the channel along the leading side transversely to the direction of movement of the photoreceptor to uniformly charge the surface of the photoreceptor as it is advanced beneath the frame member. Illumination means also are supported internally of the frame member within the channel on all four sides for uniformly discharging the charged surface of the photorecep-

tor in the areas surrounding the imaged area underlying the frame member to eliminate development thereof.

3,687,539

ELECTROPHOTOGRAPHIC APPARATUS

Masayoshi Furuichi, Tokyo, Japan, assignor to Katsuragawa Denki Kabushiki Kaisha, Tokyo-to, Japan

Filed June 29, 1971, Ser. No. 157,862

Claims priority, application Japan, June 30, 1970, 45/57067; June 30, 1970, 45/57068; July 27, 1970, 45/65655

Int. Cl. G03g *15/02, 15/04*

U.S. Cl. 355—8 **6 Claims**

In electrophotographic apparatus of the type comprising a rotary photosensitive element, a corona discharge unit for depositing a charge on the surface of the photosensitive element and an optical system for projecting an information containing light image through the corona discharge unit so as to form a latent image, the corona discharge unit and the optical system are rotated in unison about the rotary photosensitive element in a direction opposite to the direction of the rotation of the photosensitive element. The transfer printing device comprises means for bending the leading edge of a recording paper into a V shaped configuration, means for urging the recording paper against the rotary photosensitive element to transfer print a powder image onto the recording paper, a perforated suction cylinder to peel off the recording paper from the photosensitive element after transfer printing and means for admitting fluid under pressure into the space between the V shaped leading edge of the recording paper and the photosensitive element, and the cleaning device comprises a rotary brush in contact with the surface of the photosensitive element, a rotary hollow cylinder supporting the brush and provided with a plurality of perforations for supplying in from the interior of the cylinder to the brush, a stationary partition wall positioned in the hollow cylinder for dividing the interior thereof into two longitudinal compartments, a pair of corona discharge units of the opposite polarities disposed in respective compartments for ionizing the air therein, and means for supplying air under pressure into the compartments to discharge the ionized air toward the brush.

3,687,540

FORM FEEDING DEVICE WITH MEMORY MEANS

Hideo Hashimoto, Koshigaya-shi, Japan, assignor to Kabushiki Kaisha Ricoh, Tokyo, Japan

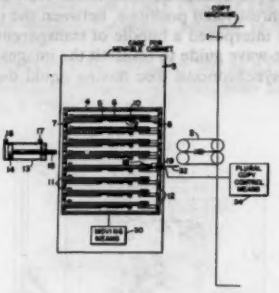
Filed April 10, 1968, Ser. No. 720,272

Claims priority, application Japan, Dec. 27, 1967, 42/83315. The portion of the term of this patent subsequent to Aug. 29, 1988, has been disclaimed.

Int. Cl. G03b *23/04*

U.S. Cl. 355—14 **4 Claims**

An automatic form feeding device for individually feeding a plurality of original forms to a copying machine and including presettable memory means for each of the original forms for indicating the number of desired copies thereof. The memory means is then used to control the copy machine and to automatically insure the generation of the desired number of copies of each original form without constant operator attention.



3,687,541

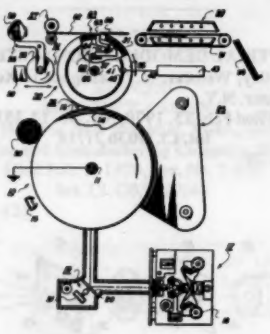
XEROGRAPHIC DUPLEX TECHNIQUE

Gilbert A. Aser, Rochester, and William A. Sullivan, Webster, both of N.Y., assignors to Xerox Corporation, Stamford, Conn.

Filed Dec. 23, 1970, Ser. No. 100,883

Int. Cl. G03g *15/00*

U.S. Cl. 355—14 **14 Claims**



Method and apparatus are herein disclosed for creating a duplex copy. First and second dry toner images are formulated on an image retaining member. The first image is electrically transferred to a storage member. A sheet of final support material is placed over the first image supported on the storage member and the second image electrically transferred to the opposite side of the support sheet. Sufficient pressure is applied to the sheet while it is in contact with the storage member to bond the images to the sheet whereby the image remains upon the sheet as it is removed from the storage member.

3,687,542

CONTROL DEVICE FOR USE IN COPYING MACHINES

Ryuzo Suzuki; Sumihisa Sato; Shuji Okamoto; Akira Shinozaki, and Tatsumi Doi, all of Tokyo, Japan, assignors to Konishiroku Photo Industry Co., Ltd.

Filed June 2, 1970, Ser. No. 42,681

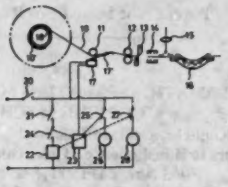
Claims priority, application Japan, June 5, 1969, 44/43626

Int. Cl. G03b *27/46*

U.S. Cl. 355—28 **6 Claims**

Means for controlling a copying machine as it exhausts its paper supply are provided in which a switch adapted to detect slack in the paper supply is connected to a control circuit

which automatically deenergizes after slack has occured. Means are provided within the circuit for allowing the copying



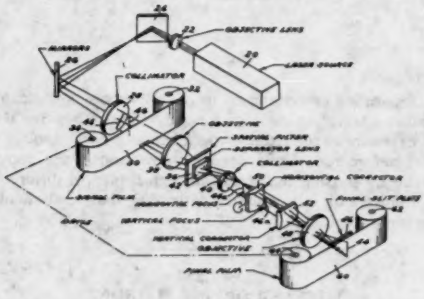
machine to complete at least the printing cycle under way upon deenergization of the control circuit after which the control circuit shuts down the copying machine.

3,687,543

OPTICAL DATA PROCESSOR

Gary D. Cochran; Louis J. Cutrona, and Arthur L. Ingalls, all of Ann Arbor, Mich., assignors to Conductron Corporation, Ann Arbor, Mich.

Filed April 26, 1963, Ser. No. 276,698
Int. Cl. G03b 27/32
U.S. Cl. 355—52 17 Claims



An improvement in an optical data processor for processing periodic data presented in an aperture of an optical system for the purpose of viewing or recording processed data which comprises:

a. means for partial control of an image line of recorded data to correct tilt in said line,
b. means in optical alignment with said first means for bringing said image line into final upright position relative to an optical axis, and
c. means for optically combining said image line with another image line, one focused in azimuth and the other in a range direction into a single line to eliminate astigmatism between the two.

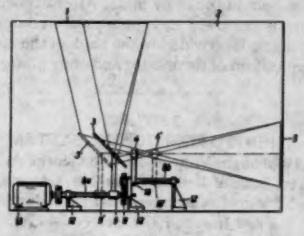
3,687,544

ELECTROPHOTOGRAPHIC COPYING MACHINE

Rudolf Muller, 18 Windscheidstr., 1 Berlin-Charlottenburg, Germany

Filed March 11, 1970, Ser. No. 18,683
Int. Cl. G03b 27/40, 27/70
U.S. Cl. 355—57 5 Claims

The invention relates to an electrophotographic copying machine comprising a stationary support for an original, of which one edge serves as a reference for locating the original that is to be copied, a likewise stationary imaging plane perpendicular thereto, in which an electrophotographic printing material is located, a mirror and an objective positively coupled for relative movement to permit different scale reproductions on the printing material in the imaging plane to be made of an original on its support.

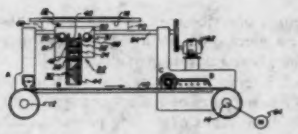


3,687,545

SHORT FOCAL LENGTH OPTICAL IMAGING SYSTEM

Robert W. Moorhusen, Penfield, N.Y., assignor to Xerox Corporation, Rochester, N.Y.

Filed March 28, 1969, Ser. No. 811,558
Int. Cl. G03b 27/70
U.S. Cl. 355—65 1 Claim



An optical imaging system including a document supporting surface, an imaging device and a light responsive member. The document to be reproduced is fixedly supported adjacent the light responsive member with a short conjugate light imaging device therebetween. The imaging device is mounted for movement in the same direction of movement as the light responsive sheet but at substantially half the speed thereof to thereby create a usable pattern on the surface of the sheet in conformity with the document being reproduced.

3,687,546

PHOTO-PRINTING APPARATUS

Edward N. Endebrock, San Jose, and Charles M. Bodine, Los Altos, both of Calif., assignors to IPT Corporation, Mountain View, Calif.

Filed Aug. 13, 1970, Ser. No. 63,494
Int. Cl. G03b 27/60
U.S. Cl. 355—73 17 Claims

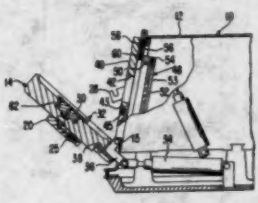


Photo-printing apparatus for duplicating a master photomask or plate. A copy is placed on a holder within a door pivotally mounted to a housing enclosing a light exposure system. The master plate is placed upon the housing and automatically aligned with the copy plate when the copy plate is

pivoted into an operational position. The copy plate is held in place by negative pressure applied through a piston located in the door. Positive pressure is exerted upon the piston and master plate during exposure, while still maintaining the negative pressure behind the copy plate. After exposure, the positive pressure is removed and, in a preferred embodiment, a negative pressure is provided to the back of the master plate to facilitate separation of the master and copy plates.

3,687,547

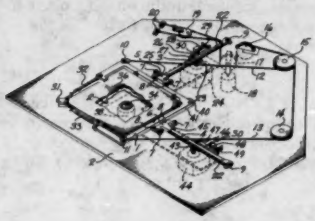
PHOTO POSITIONING SYSTEM

Gilbert L. Hobrough, Vancouver, and George A. Wood, North Vancouver, both of British Columbia, Canada, assignors to Hobrough Limited, Vancouver, British Columbia, Canada

Filed June 8, 1970, Ser. No. 44,305

Int. Cl. G03b 27/62

U.S. Cl. 355—75 10 Claims



A system is described which accurately positions a photograph in an electronic photo scanning system. A frame for holding the photograph is provided with first and second surfaces which intersect at an angle of 90°. First and second drive members having pairs of rollers engaged with these surfaces each have drive racks extending perpendicular from the surfaces so that electric drive motors coupled with the racks will serve to move the frame and thereby position any selected portion of the photograph over the scanning device. Geometric relationships and construction details are disclosed.

3,687,548

SHEET CONVEYOR FOR AUTOMATIC COPYING MACHINES

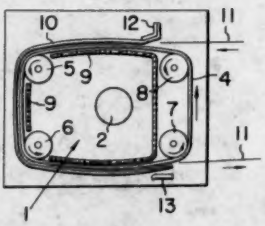
Kobayashi Yugoro, Tokyo, Japan, assignor to Kabushiki Kaisha Ricoh, Tokyo, Japan

Filed Sept. 23, 1969, Ser. No. 860,251

Claims priority, application Japan, Sept. 27, 1968, 43/69425

Int. Cl. G03b 27/62

U.S. Cl. 355—76 4 Claims



A sheet conveyor device for automatic copying machine where a suction tank has rollers positioned therearound for endless belts to be driven thereon, and suction holes are located in said tank between the belts. A guide sheet extends around most of the suction tank and is closely spaced thereto so that a sheet of paper can be passed between said guide sheet and the belts and held against the belts by the suction.

3,687,549

Patent Not Issued For This Number

3,687,550

AUTOMATIC SEPARATING MECHANISM OF A COPYING MACHINE

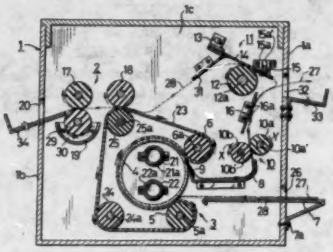
Masami Koguchi, and Isao Takahashi, Tokyo, both of Japan, assignors to Bunshodo Co., Ltd., Tokyo, Japan

Filed Nov. 24, 1971, Ser. No. 201,770

Claims priority, application Japan, Nov. 24, 1970, 45/103560

Int. Cl. G03b 27/30

U.S. Cl. 355—106 1 Claim



A separating mechanism in a photocopying machine separates a traveling stack of a negative and a positive sheet upon exposure of the latter by light beams passed through the former before reaching a developing section of the copying machine by passing the stack through a pair of differential feed rollers and subsequently deflecting that lead sheet to cause separation.

3,687,551

THERMOCOPYING MACHINE

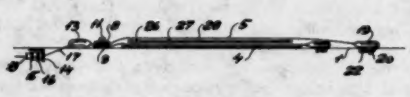
Ejnar Munk Laursen, Adiget 18, 2610 Rodovre, Denmark

Filed March 24, 1970, Ser. No. 22,346

Claims priority, application Denmark, March 24, 1969, 1605/69

Int. Cl. G03b 27/10

U.S. Cl. 355—110 12 Claims

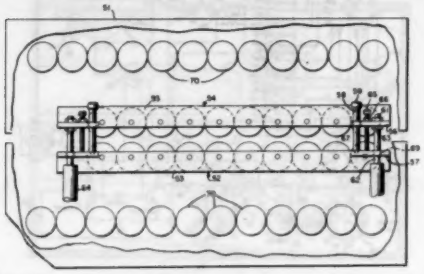


A thermocopying machine having an endless belt on which the copying set consisting of an original and a copy sheet is carried past a rod shaped infrared radiator. The belt is provided with holding means which are arranged to resist displacements of the leading and trailing edges of the copying set relative to the belt during the passage of the set through a curved section of the path opposite the radiator. The force with which said displacements are resisted is at least partly converted into radially directed contact pressure between the original and the copy sheet.

3,687,552
DEVICE FOR CONTACTING AND EXPOSING SENSITIZED ELEMENTS

Robert James Almond, Holmdel, and Edward Francis Hagan, Old Bridge, both of N.J., assignors to E. I. du Pont de Nemours and Company, Wilmington, Del.

Filed Sept. 17, 1971, Ser. No. 181,446
Int. Cl. G03b 27/04
U.S. Cl. 355—113 9 Claims



A device for holding in optical contact a photographic transparency and a sensitized element, having a pressure frame and an exposure frame. The pressure frame has a plurality of wheels disposed in columns on rows of shafts in a pattern to provide uniform exposure of all areas of the sensitized element to a source of actinic radiation, and to hold the transparency in optical contact with the sensitized element, when the exposure frame is affixed to the element and transported through the pressure frame.

The device is useful for uniformly exposing a series of sensitized elements conveyed in a continuous web and for exposing individual sensitized elements.

ERRATA

For Classes 356—28, 356—74, 356—96, and 356—239 see:
Patents Nos. 3,687,517 through 3,687,519, inclusive, and 3,688,235

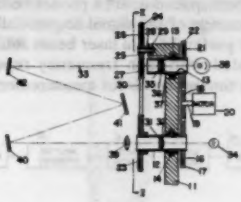
3,687,553
Patent Not Issued For This Number

3,687,554
SPECTROSCOPIC MEASUREMENT SYSTEM USING ROTATING PATTERNED GRILL MEMBERS

Kenji Iwahashi, Kyoto, Japan, assignor to Shimadzu Seisakusho Ltd., Kyoto-shi, Japan

Filed Dec. 24, 1970, Ser. No. 101,275
Claims priority, application Japan, Dec. 24, 1969, 44/104596; June 10, 1970, 45/50634; June 17, 1970, 45/52503
Int. Cl. G01j 3/00, 3/42
U.S. Cl. 356—74 18 Claims

A novel system for spectroscopic measurement adaptable in spectrum analysis utilizing a plurality of moire patterns. In order to improve the resolving power of the spectroscopic instrument without any reduction in the intensity of radiant energy to be measured, a pair of grills each having a plurality of narrow slits are disposed at the entrance side and the exit side with respect to a light source. The spectroscopic measurement is performed by discriminating a moire pattern formed by a radiant beam of specific wave length, which is static with respect to the movement of the exit grill, from other moire patterns formed by radiant beams which are dynamic with respect to the movement of the exit grill. In addition, to facilitate the electrical measurement of the intensity of radiant

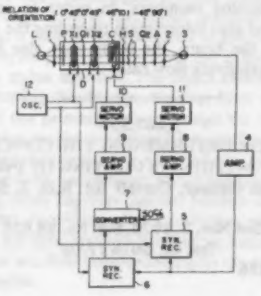


energy, means for giving a pulsating characteristic to a beam of light to be sensed by a photomultiplier tube is provided.

3,687,555
PHOTOELECTRIC POLARIZATION ANALYZER

Tadaaki Yamamoto, and Toshiyuki Kasai, both of Kawasaki, Japan, assignors to Nippon Kogaku K.K.

Filed Dec. 23, 1970, Ser. No. 101,070
Claims priority, application Japan, Dec. 29, 1969, 44/123910
Int. Cl. G01n 21/40
U.S. Cl. 356—114 2 Claims



Photoelectric polarization analyzer of this invention includes polarization system consisting of a linear polarizer or a polarizing orientation oscillating K.D.P. elements, quarter-wave plate and a compensator; an analyzer; another quarter-wave plate provided between the analyzer and a specimen; an electric device for separating two photoelectric signals converted by a photoelectric element from the light transmitted through said other quarter-wave plate into two electric control signals. In the prior art one of the control signals is used to rotate the polarization system for compensating the orientation of the specimen, and the other control signal is used for shifting the compensator for compensating the phase difference. However, in this invention a half-wave plate is interposed between the polarization system and is and the specimen rotatable in a plane perpendicular to the optic axis of the polarization system, and said one of the two signals is applied to the half-wave plate to rotate it instead of rotating the polarization system, which simplifies the structure.

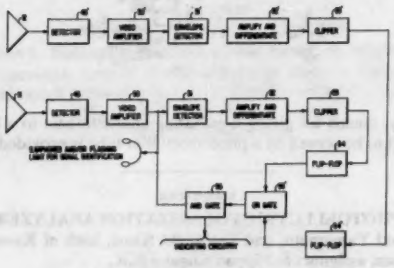
3,687,556
NAVIGATION SYSTEM

Harold J. Price, North Palm Beach, and Robert M. Snyder, Jupiter, both of Fla., assignors to Oceanography Development Corporation, Riviera Beach, Fla.

Filed Sept. 18, 1970, Ser. No. 73,357
Int. Cl. G01b 11/26
U.S. Cl. 356—152 20 Claims

A position locating method and apparatus are provided which feature continuously rotating a transmitter device for

generating a fan-shaped beam signal from a single reference point and monitoring the signal at a position spaced from the reference point with a single detector having a pair of signal receiving members spaced apart a predetermined distance for detecting the passage of the signal sequentially therethrough. The transmitter preferably is a laser beam source which is amplitude modulated with high frequency repetitive pulses to provide precise timing signals for measurement at the receiver



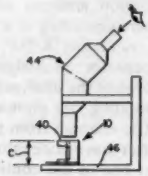
and frequency modulated in a linearly increasing fashion during each revolution for providing bearing information. The range, or distance, between the source and the signal-receiving detector, is derived by measuring the time interval elapsing between the receipt of the rotating beam signal respectively by the pair of receiving members. In order to provide signal identification and also information regarding the angular rotational speed of the beam, the beam may also be amplitude modulated at a relatively slow rate.

3,687,557

METHOD FOR DETERMINING THE CONCENTRICITY OR WIRE WITHIN ITS COATING OF INSULATION

Oliver Randolph Odhner, Gerloff Rd. R.D. 2, Schwenksville, Pa.

Filed Nov. 2, 1970, Ser. No. 85,935
Int. Cl. G01b *11/08*
U.S. Cl. 356—156 **3 Claims**



Insulated wire is stripped to obtain a piece of insulation, and the piece of insulation cut and vertically mounted under a prefocused microscope to view the end of the insulation in order to determine the concentricity of the insulation with the wire formerly contained therein; these steps are accomplished with a single apparatus, and eliminate refocusing the microscope for each sample of insulation inspected.

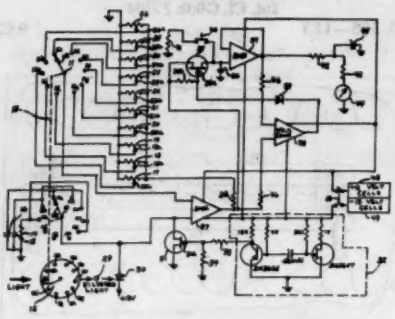
3,687,558

LASER POWER-ENERGY METER

George A. Rex, San Antonio, Tex., assignor to The United States of America as represented by the Secretary of the Air Force

Filed July 16, 1971, Ser. No. 163,204
Int. Cl. G01J *1/42*, *1/44*
U.S. Cl. 356—218 **6 Claims**

A laser power-energy meter includes a photo-diode which acts as a current generator whose output is directly proportional to the optical power incident upon it. The meter provides a direct measurement of optical energy on a per pulse basis on single or repetitive laser pulses by measuring each pulse individually and storing and displaying the energy of the



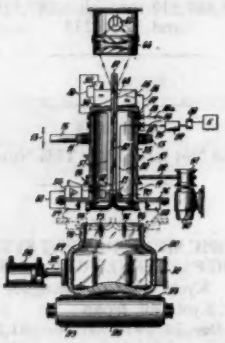
largest received. It also provides a measurement of the power of CW lasers. The measurements are in terms of amount of energy which would enter the human eye. The meter is battery operated and portable.

3,687,559

APPARATUS FOR INSPECTING GLASS CONTAINERS OR THE LIKE

Knut Fischer, Obernkirchen, Germany, assignor to Herman Heye, Obernkirchen, Germany

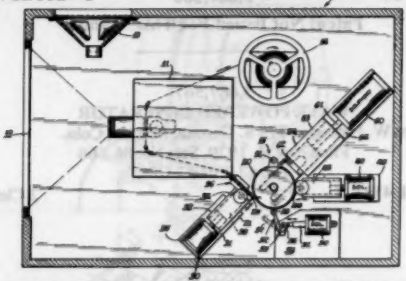
Filed Nov. 24, 1970, Ser. No. 92,442
Claims priority, application Germany, Dec. 2, 1969, P 19 60 326.0
Int. Cl. G01n *21/32*
U.S. Cl. 356—240 **17 Claims**



Apparatus for the inspection of glass containers to detect cracks, voids, bubbles or other flaws has a rotary testing unit which carries one or more photoelectric detectors whose receivers transmit signals to one or more amplifiers on the testing unit in response to detection of flaws. The light supplying means of the detectors receive light from a light source which is stationary or shares the movements of the testing unit and such light supplying means include bars and/or fiber bundles of light conducting materials which conduct light from the light source and direct it against the selected portion or portions of the container which is to be inspected. The testing unit is movable axially toward and away from the container. The amplifiers receive current by way of a first slip ring on the

testing unit, and the amplified signals are transmitted to an ejector for defective containers by way of a second slip ring.

3,687,560
PROJECTOR PLAYER
Ray C. Anderson, 3700 15th St., Rock Island, Ill.
Filed March 12, 1969, Ser. No. 806,619
Int. Cl. G03b *31/02, 21/04, 23/02*
U.S. Cl. 352—8 **16 Claims**



An automatic sound film projector system effective to play in sequence a plurality of encased sound films. The system includes an electrically operated film feed mechanism for advancing the film from one of a plurality of film casettes into a self-threading projector, a sequentially operated electric rewind mechanism, an electrically operated retaining mechanism for preventing the ejection of more than one film cassette at a time, and a film casette ejector mechanism for ejecting a film that has been played and rewound.

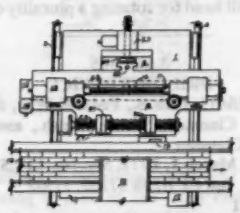
3,687,561
WRITING IMPLEMENT
Phillip Phillips, 355 E. 187th St., Bronx, N.Y.
Filed April 23, 1971, Ser. No. 136,757
Int. Cl. B43k *5/14, 5/04*
U.S. Cl. 401—134 **8 Claims**

A writing implement, such as a marking instrument, includes separably coupled coaxial upper reservoir and lower barrel sections. A writing nib extends along and projects beyond the ends of the lower barrel section and has an ink feed bore along its length and terminates in a tapered writing tip. A piercing tube extends upwardly from the barrel bottom section and engages the top part of the nib and a venting passage of lesser maximum dimensions than the ink feed bore extends along the inner feed of the piercing tube and communicates with the exterior of the barrel bottom section. A replaceable liquid ink cartridge is housed in the reservoir section and is engaged by the piercing tube.

3,687,562
DUAL TIP FOUNTAIN PEN
Lloyd P. Basham, 2745 Carmar Dr., Los Angeles, Calif.
Filed Dec. 9, 1970, Ser. No. 96,484
Int. Cl. B43k *5/18, 1/06*
U.S. Cl. 401—230 **6 Claims**

A tubular barrel for holding an ink supply is fitted at its lower end with a pen-holding structure that incorporates two distinct writing tips, or styli. The pen structure is an assembly of a plug-like body, an elongate primary stylus member, spring means normally biasing the stylus member to an extended position, and a tubular shell secured to the body and having a secondary stylus portion encircling the extendable portion of the primary stylus member. The stylus member and the shell have cooperating shoulder portions to limit the spring biased extension of the primary stylus through the secondary stylus. Ink conducting means are formed longitudinally of the primary stylus, intercommunicating a spaced pair of chambers in the structure, the body and primary stylus having cooperating portions keying them together against relative angular displacement and, also, providing a fluid restriction aiding in the regulation of the ink flow through the ducting means under varying conditions of ink flow corresponding to use of the primary or secondary stylus.

3,687,563
DRILLING MECHANISM
John R. McConnell, 148 Woodside Ave., Ridgewood, N.J.
Continuation-in-part of Ser. No. 737,654, June 17, 1968, Pat. No. 3,546,772. This application May 19, 1970, Ser. No. 38,669
Int. Cl. B23b *39/22, 41/00*
U.S. Cl. 408—39 **25 Claims**



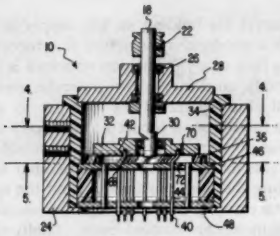
A drilling-conveying apparatus for the layout and fabrication of structural beams and girders comprising, dual mobile opposite hand co-ordinated drilling-conveying units, mounted on a common longitudinal supporting-guiding track and symmetrically spaceable thereon to any selected lateral spacing by a common right and left threaded relocating shaft, oppositely threaded through the bases of the said dual opposed units and longitudinally restrained by a mid-located floor-mounted anchor-bearing located between the rails of the said track, with the operating faces of the said units facing inwardly

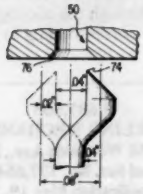
towards said anchor-bearing, each of said co-ordinated units having an integral vertical wall on the outer end of said base, vertically guiding a low elevateable transversely-extending platen supporting and guiding transversely convergible dual drill heads holding plural horizontal drills for simultaneously drilling both shape flanges and an adjustable-height vise to locate, elevate and hold a raw shape for precise drilling, a longitudinal ram projectible through said wall to length-center shapes between said dual units, a stationary forwardly-overhung drill head with transversely-disposed plural vertical drills for simultaneous drilling of the shape web, an integral transversely-operable multiple-strand chain-link conveyor means to transport the shapes forwardly into and out of the operating area, and powered moving, elevating, rotating, operating and control means.

3,687,564
MULTIPLE DRILL HEAD

John A. Cupler, II, 10 Cupler Dr., Cumberland, Md.

Filed Sept. 14, 1970, Ser. No. 71,892
Int. Cl. B23b *39/16*
U.S. Cl. 408—47 **4 Claims**



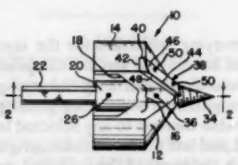


A drill comprising an integral drill blade, crank and spindle and a multiple drill head for rotating a plurality of such drills.

3,687,565
DRILL BIT DEVICE

John E. Byers, 28411 14th S., Federal Way, Seattle, Wash., and Wells H. Claussen, Seattle, Wash., assignors to said Byers, by said Claussen

Filed March 1, 1971, Ser. No. 119,525
Int. Cl. B23b *51/00, 51/02*
U.S. Cl. 408—201 **14 Claims**



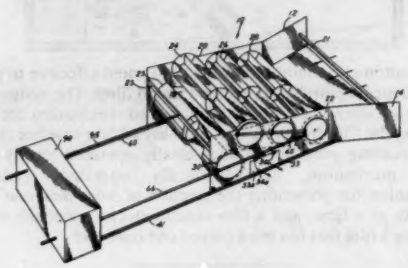
Drill bit construction having a removable lead screw and a body which has a conically shaped work facing surface. With generally triangularly shaped cut-away segments. Each of the segments has a cutting edge either in the form of a detachable blade or integrally formed into the body. The body itself is also detachably removable from the drill shaft or shank. In smaller diameter embodiments a spiral member recedes from the shaft adjacent the head for removing shaving as the bit proceeds through the wood.

3,687,566
Patent Not Issued For This Number

3,687,567
WAVE POWERED GENERATOR

William W. Lininger, 775 S. Corona, Denver, Colo.

Filed Nov. 4, 1970, Ser. No. 86,666
Int. Cl. F01d *25/28*
U.S. Cl. 415—7 **2 Claims**

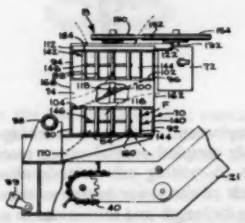


A power generator, utilizing ocean waves as a motivating force, having at least one undershot paddle wheel above a upward sloping gathering platform and at least one paddle wheel arranged below the platform at one end. The upper paddle wheels, arranged to deliver power from incoming waves, and, outgoing waves are arranged to rotate a propeller shaft. The gathering platform guides incoming waves in an undershot action on the wheels and discharges some of the water over the end of the platform in an overshot action on the paddle wheel below the platform.

3,687,568
TRASH BLOWER

Olin L. Looker, Milford, Ill., assignor to FMC Corporation, San Jose, Calif.

Division of Ser. No. 854,227, Aug. 29, 1969, Pat. No. 3,640,055. This application Sept. 2, 1971, Ser. No. 177,296
Int. Cl. F04d *29/40, 17/08*
U.S. Cl. 415—99 **5 Claims**



A blower for cleaning trash from a corn harvester is in the form of a square housing having a slanting divider plate, a central vertical shaft with impellers above and below the divider plate, and suitable air inlet and discharge openings in the housing.

3,687,569

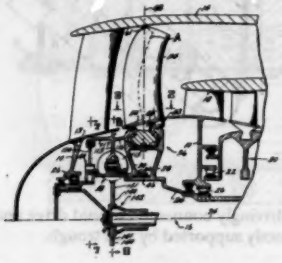
ROTOR WITH VARIABLE ANGLE BLADES

Nicholas Klompas, Lynnfield, Mass., assignor to General Electric Company

Continuation-in-part of Ser. No. 868,753, Oct. 23, 1969, abandoned. This application March 19, 1971, Ser. No. 126,197

Int. Cl. F01d 7/02

U.S. Cl. 416—156 15 Claims



A support, actuation, and balancing structure for rotor blades in a variable blade angle axial flow fan, compressor or turbine as may be used in a turbojet or turbofan engine. The supporting structure may include a shaft attached to each rotor blade and restrained from outward radial travel, under high centrifugal loading, by the inwardly facing surfaces of two spaced apart discs. Actuation may be provided by at least one fluid powered piston which controls blade angulation through rotation of one disc member relative to the other. Centrifugally controlled balancing means may also be provided to insure a uniform flow condition through the blades by maintaining the blades in a stable position of angulation upon disengagement of the actuator. Each rotor blade preferably includes a central axis about which the blade angle is varied, and which is in close proximity to the intersection of the leading edge of the blade with the blade tip.

3,687,570

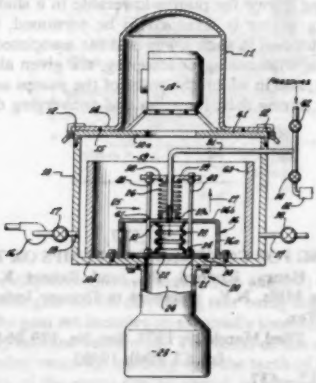
PNEUMATIC CONTROL VALVE FOR VACUUM CHAMBERS

John M. Ellison, Sherman Oaks, Calif., assignor to Vacuum/Atmospheres Corporation, North Hollywood, Calif.

Filed Aug. 11, 1969, Ser. No. 849,100

Int. Cl. F04b 41/06; F16k 31/145

U.S. Cl. 417—199 7 Claims



The invention concerns a differential pressure responsive valve of simple construction contained within the vacuum zone of high vacuum apparatus and operable to protect an ion pump by opening only after the pressure in a work chamber has been reduced to low level by a roughing pump.

3,687,571

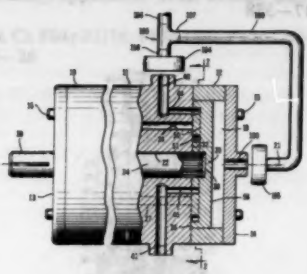
HIGH PRESSURE EXPANSIBLE CHAMBER DEVICE

Wayne B. Easton, 3007 W. 96th St. Circle, Bloomington, Minn.

Filed Jan. 13, 1971, Ser. No. 106,048

Int. Cl. F01c 21/00; F03c 3/00; F04c 15/00

U.S. Cl. 418—270 2 Claims



The invention relates to an expansible chamber type of device which is especially adapted for use with high pressure operating fluids. The device has a valve which directs pressurized fluid from an inlet port to the expanding chambers thereof and non-pressurized fluid from the contracting chambers thereof to an outlet port. A valve sealing arrangement is provided whereby pressurized fluid is utilized to bias the valve into sealing engagement with a valve block which contains passages leading to the expanding and contracting chambers. A main feature is that the inlet and outlet ports are reversible from the standpoint that either port may be used as the inlet port to obtain a desired direction of rotation without adversely affecting the operativeness of the sealing arrangement.

3,687,572

MEANS FOR REGULATING THE CAPACITY OF ROTARY MACHINES

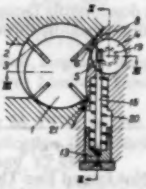
Rune Valdemar Glanvall, Norrkoping, Sweden, assignor to Stal Refrigeration AB, Norrkoping, Sweden

Filed Nov. 16, 1970, Ser. No. 89,612

Claims priority, application Sweden, Nov. 27, 1969, 16371/69

Int. Cl. F04b 49/00

U.S. Cl. 417—310 1 Claim



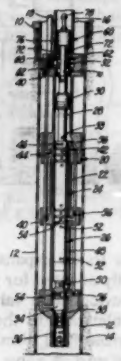
A rotary machine of the sliding vane type has an arrangement for releasing a part of the fluid compressed in the chamber to regulate the capacity of the pressure. This comprises an opening in the wall of the pressure chamber, partially overlying the opening of the cylinder, and a control slide turnably and slidably mounted in the opening. This slide has a passage which is more or less exposed depending on its angular position, the position being controlled by a fluid pressure operated piston. A spring on the opposite side of the control slide from the cylinder pushes the slide toward the cylinder. Under excessive pressure conditions the slide will move away from the wall of the cylinder against the spring and expose the hole of the passage so as to admit full relief of pressure in the chamber.

3,687,573

REVERSE CIRCULATION FLUID OPERATED PUMP SYSTEM

Ralph F. McArthur, Huntington Park, and Meile F. Geurts, Los Angeles, both of Calif., assignors to Kobe, Inc., Huntington Park, Calif.

Filed Dec. 29, 1970, Ser. No. 102,376
Int. Cl. F04b 47/10
U.S. Cl. 417—358 4 Claims



A fluid operated pump system of the open type wherein a pump unit which includes a fluid operated pump is circulated into and out of a well through a relatively large production tubing. Operating fluid under pressure for actuating the fluid operated pump is delivered thereto through a smaller, parallel supply tubing, the production fluid and the spent operating fluid discharged by the pump flowing to the surface through the larger production tubing to minimize fluid friction. The pump unit is normally biased upwardly in its bottom hole housing by the operating fluid under pressure in the supply tubing acting on a downwardly facing area of the pump unit. During normal operation of the fluid operated pump, the pump unit is latched against upward movement, and the system includes means movable downwardly through the production tubing into engagement with the pump unit for unlatching the pump unit when removal thereof is desired. Thereupon, the pressure of the operating fluid in the supply tubing acting on the downwardly facing area of the pump unit displaces the pump unit upwardly through the production tubing.

3,687,574

Patent Not Issued For This Number

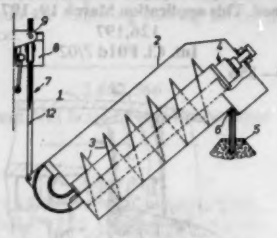
3,687,575

CONVEYOR WORM FOR CONVEYING LIQUIDS AND MUD-LIKE SUBSTANCES

Josef Bauer, Gustavsburg, Germany, assignor to Maschinenfabrik Augsburg-Nurnberg Aktiengesellschaft Zweigniederlassung Nurnberg, Nurnberg, Germany

Filed July 7, 1970, Ser. No. 52,935
Int. Cl. F04b 17/00, 35/04; F01d 15/12; F03d 11/02; B65g 33/00
U.S. Cl. 417—423 9 Claims

A worm conveyor, especially for conveying liquid and mud, with a trough partly surrounding the worm and with a drive for rotating said worm, in which one end of said worm is rotatably journalled directly on said trough, whereas the other end of the worm is drivingly connected to said drive and through the latter is indirectly supported by said trough.

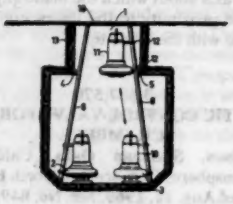


3,687,576

GUIDING DEVICE FOR PUMPS LOWERABLE IN SHAFTS

Sture Sven-Olof Wikholm, and Carl Evert Sjostrand, Solna, both of Sweden, assignors to Stenberg-Flygt AB, Solna, Sweden

Filed Nov. 5, 1970, Ser. No. 87,137
Claims priority, application Sweden, Nov. 17, 1969, 15771/69
Int. Cl. F04b 17/00, 35/00, 35/04; B67d 5/40
U.S. Cl. 417—424 4 Claims



A guiding device for pumps lowerable in a shaft, in which the guiding device is arranged to be torsioned, inclined or otherwise formed in such a way that the associated pumps, in conjunction with raising or lowering, are given also a lateral movement, and in which the paths of the pumps are arranged to diverge during their lowering and converging during their raising.

3,687,577

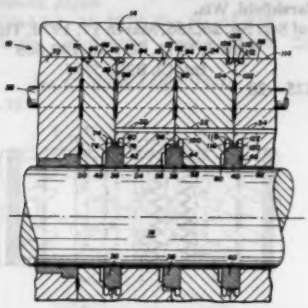
PACKING FOR COMPRESSORS, PUMPS OR THE LIKE

Ralph E. Henry, Rixford, Pa., and Robert F. Kohanski, Westons Mills, N.Y., assignors to Dresser Industries, Inc., Dallas, Tex.

Filed March 29, 1971, Ser. No. 129,064
Int. Cl. F04b 19/00
U.S. Cl. 417—437 10 Claims

The improved annular packing members described hereinafter are arranged to be positioned within the cylinder of a compressor in encircling relationship to the plunger or rod reciprocating therethrough. The annular packing members have one or more annular grooves extending around the inner and outer peripheries forming an annular, pressure

responsive lip thereon. The pressure responsive lip is located in juxtaposition with an adjacent packing member to provide a



more efficient seal and to reduce the stress concentrations on the packing members resulting from the clamping load applied thereon during assembly.

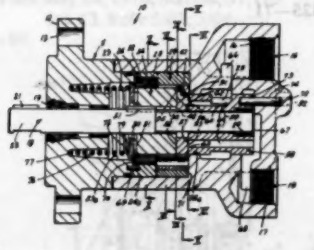
ERRATUM

For Class 418—270 see:
Patent No. 3,687,571

3,687,578
HYDRAULIC PUMP MOTOR

Hollis N. White, Jr., Lafayette, and Dale E. Bough, West Lafayette, both of Ind., assignors to TRW Inc., Cleveland, Ohio

Filed Sept. 4, 1970, Ser. No. 69,580
Int. Cl. F01c *21/16*; F04c *15/04*; F03c *3/00*
U.S. Cl. 418—21 **2 Claims**

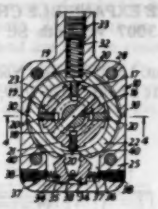


A positive displacement hydraulic pump (motor) which employs a gerotor gear set for displacing (for being displaced by) the fluid. The gear set includes an externally toothed rotor and an internally toothed stator ring. The teeth of the stator ring comprise roller vanes for meshing with the teeth of the stator. The capacity of the pump can be varied, in one embodiment by varying the degree of overlapping of the teeth of the rotor and stator ring and thus varying the effective displacement of the gears, and in another embodiment by employing a second gerotor gear set, the phase of which can be adjusted with respect to the first gerotor gear set for varying the effective displacement of both sets.

3,687,579
ROTARY PUMPS

Kenneth C. Martin, Walderslade, Chatham; Michael D. Baxter, and John F. Holmes, both of Strood, Rochester, all of England, assignors to Hobourn-Eaton Manufacturing Company Limited, Rochester, Kent, England

Filed July 17, 1970, Ser. No. 55,748
Claims priority, application Great Britain, July 21, 1969, 36,659/69
Int. Cl. F01c *21/16*; F03c *3/00*; F04c *15/04*
U.S. Cl. 418—26 **12 Claims**

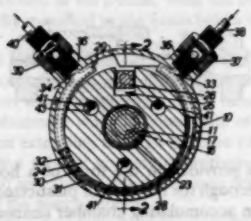


A constant delivery rotary pump includes a rotor which rotates in a pumping chamber formed in an inner member and which carries round with it a set of pumping elements engaging the wall of the chamber and moving radially with respect to the rotor to perform a pumping action. The inner member is mounted in an outer member for sliding movement parallel to the line of action of the resultant of the fluid pressure acting in the pumping chamber. The outer member is fixed with respect to the axis of rotation of the rotor. A spring resists movement of the inner member relative to the outer member due to said resultant, and damped control means is provided for controlling in dependence on the pump delivery pressure the position of the inner member in its sliding movement. The control means includes a pair of wedge elements which are mounted side by side on their bases in the outer member and each of which has an apex in engagement with an inclined cam surface on the exterior of the inner member. The spring causes the inner member to rotate the wedge elements on to their bases, whilst the pump delivery pressure is applied between the elements and tends to rotate them about the outer side edges of their bases thereby moving the inner member against the spring force to control the pump delivery pressure.

3,687,580
APPARATUS CAPABLE OF USE AS A PUMP OR A MOTOR

Kenneth Griffiths, Walsall, England, assignor to Griffiths Fuel Injection (Development) Limited, Tunstall, Stoke-on-Trent, England

Filed May 26, 1970, Ser. No. 40,543
Claims priority, application Great Britain, May 31, 1969, 27,685/69; June 27, 1969, 32,556/69
Int. Cl. F01c *5/00*; F04b *43/08*, *43/12*
U.S. Cl. 418—45 **9 Claims**



There is disclosed hereinafter an apparatus which may be used as a pump, particularly suitable for fuel injection, or as a

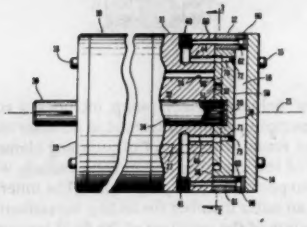
fluid driven motor. The apparatus comprises at least one flexible diaphragm which defines with a supporting part thereof a chamber for receiving fluid, and a compression element which is operatively connected to a rotary shaft and moves with an oscillatory action normal to the diaphragm, and bears on the diaphragm, to compress the chamber intermittently so that fluid in the chamber in pressurized and leaves the chamber with a pulse-like action.

3,687,581

HIGH PRESSURE EXPANSIBLE CHAMBER DEVICE

Wayne B. Easton, 3007 W. 96th St. Circle, Bloomington, Minn.

Filed Jan. 13, 1971, Ser. No. 106,047
Int. Cl. F01c *21/00*; F02c *3/00*; F04c *15/00*
U.S. Cl. 418—270 **5 Claims**



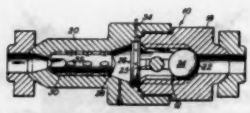
The invention relates to an expansible chamber type of device which is especially adapted for use with high pressure operating fluids. The device has a valve which directs pressurized fluid from an inlet port to the expanding chambers thereof and non-pressurized fluid from the contracting chambers thereof to an outlet port. A valve sealing arrangement is provided whereby pressurized fluid is utilized to bias the valve into sealing engagement with a valve block which contains passages leading to the expanding and contracting chambers. A main feature is that the inlet and outlet ports are reversible from the standpoint that either port may be used as the inlet port to obtain a desired direction of rotation without adversely affecting the operativeness of the sealing arrangement.

3,687,582

APPARATUS FOR FLOWING GAS INTO PLASTICIZED MATERIAL

James W. Hendry, Helena; Jack E. Kimball, and Charles L. D. Chin, both of Fremont, all of Ohio, assignors to Borg-Warner Corporation, Chicago, Ill.

Filed June 8, 1970, Ser. No. 44,448
Int. Cl. B29f *1/02*
U.S. Cl. 425—4 **14 Claims**



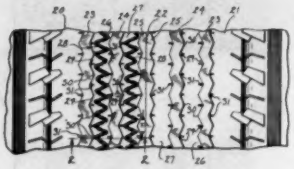
Apparatus is provided in the form of a housing having a passage therethrough for the flow of plasticized plastic from a plasticizer to an accumulating chamber connected to a molding apparatus and into which a foaming gas is flowed. A check valve insures flow of the plastic in the one direction. Means in the passage are provided for causing turbulence in the gas-plastic mixture to insure mixing thereof.

3,687,583

ART OF FORMING TIRE TREADS WITH ELONGATED TRACTION-AUGMENTING ELEMENTS

Paul J. Felker, Marshfield, Wis., assignor to Penetred Corporation, Marshfield, Wis.

Division of Ser. No. 20,356, March 17, 1970. This application June 3, 1971, Ser. No. 149,568
Int. Cl. B29h *5/04*
U.S. Cl. 425—20 **2 Claims**



The tire-forming matrix has elongated zigzag ribs which are spaced apart to provide grooves for receiving and centering metal traction-augmenting coils. The sides of the ribs have peaks and valleys and peaks of a rib on one side of a received coil are disposed opposite the valleys of the rib on the other side of the coil, and sipe-forming strips are caused to project transversely from each valley, which strips aid the peaks in centering the wire coil. When the tire tread is molded the valleys at the sides of the matrix ribs provide a row of triangular rubber blocks on each side of each rider strip which project beyond the sides of the coil, and the sipe strips are positioned to break up these rubber blocks and provide more movement on the tire tread.

3,687,584

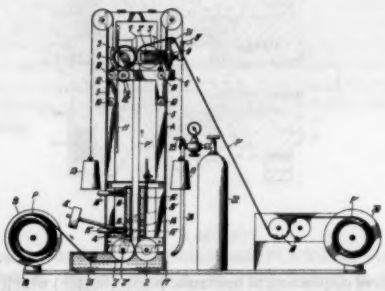
Patent Not Issued For This Number

3,687,585

APPARATUS FOR MANUFACTURING SYNTHETIC RESIN TUBE PROVIDED WITH HEAT-SHRINKING PROPERTY

Haruo Takagi, 9 Saiwaicho-dori, 5-chome, Naniwa-ku, and Yasuo Yamagishi, 660, Shinke-cho, Osaka, both of Japan

Filed Jan. 2, 1970, Ser. No. 225
Int. Cl. B29c *17/00*
U.S. Cl. 425—71 **4 Claims**

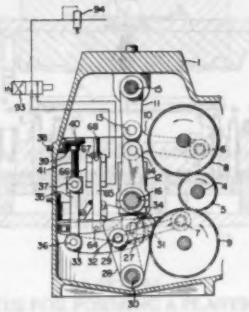


Apparatus for manufacturing a thermoplastic synthetic resin tube whose diameter shrinks to its original diameter when re-heated using the method comprising the steps of inflating a softened material tube with air in a heater cylinder of larger diameter to enlarge the original tube diameter, then cooling it rapidly and finally winding same flat onto a reel through take-up rolls. The thus finished tube has an increased outlet for covering or sealing application on dry cells, bamboo rods, bottle-caps, etc. because of its shrinking to the original diameter by re-heating.

3,687,586
POWDER-FORMING PRESS

Ei Hara, Tokyo, and Tatsuichi Yokoyama, Urawa, both of Japan, assignors to Tamagawa Kikai Kinzoku Kabushiki Kaisha, Tokyo-to, Japan

Filed July 21, 1970, Ser. No. 56,835
Claims priority, application Japan, April 22, 1970, 45/33817
Int. Cl. B30b *11/02, 15/14*
U.S. Cl. 425—78 3 Claims

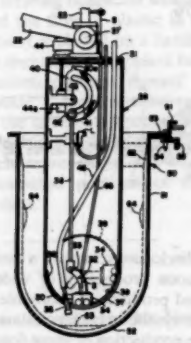


In a press for compacting and forming a powder material between a stationary lower punch, an upper punch driven by a cross bar, and an outer mold (die) driven by a cross shaft, a wedge retractably interposed between the cross bar and cross shaft is retracted by and progressively with the descent of the cross shaft by control means, with the resultant effect that the upper and lower punches press simultaneously on the powder material relative to the die. The action of the control means is adjustable to adjust the proportions of the pressing actions of the upper and lower punches.

3,687,587
APPARATUS FOR FORMING FIBER PREFORMS

Arthur J. Wiltshire, Cleveland, Ohio, assignor to Structural Fibers, Inc., Chardon, Ohio

Filed May 14, 1970, Ser. No. 37,173
Int. Cl. B29c *5/02, 5/04*
U.S. Cl. 425—80 8 Claims

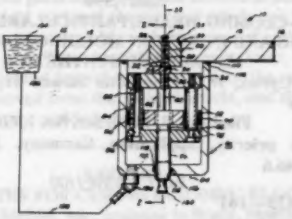


A fiber preform for use in bag molding, fiber-reinforced molded resin articles is disclosed. The preform is a unitary, seamless, porous structure comprising short lengths of fibers which are bonded together by a resin binder. The preform has thickened areas which define zones of greater reinforcement for a finished structure. A machine for fabricating such a preform is also disclosed. The machine includes a screen form which is mounted within a surrounding vacuum chamber for rotation about its longitudinal axis. A fiber dispenser or cutter is mounted for movement in an axial direction with respect to the screen form but in a path corresponding to but spaced from the inner longitudinal profile of the screen form. The cutter is movable at a predetermined variable rate so that the wall thickness of the fibers may be varied to provide zones of greater fiber reinforcement. A resin binder spray gun follows the cutter along its path. The fibers are thrown against the screen by the cutter and are held in place by suction and by the binder. The binder is then cured by heat and the cured preform is removed from the screen by raising the screen from the vacuum chamber and then tilting the screen for easy access by an operator.

3,687,588
LUBRICATED DIE AND PUNCH ASSEMBLY FOR COMPACTING POWDER MATERIAL

Joseph E. Smith, Birmingham, Mich., assignor to Wolverine-Pentronix, Inc., Lincoln Park, Mich.

Filed Sept. 8, 1970, Ser. No. 70,379
Int. Cl. B30b *11/02, 15/02*
U.S. Cl. 425—96 9 Claims



A die and punch assembly for use on a powder compacting press for making articles compacted from a powder and means for lubricating the die and punch assembly. The assembly comprises a die plate appropriately mounted to the press and includes an aperture in which a die bushing is mounted, the die bushing having a cavity with a punch slidably and snuggly disposed therein. The punch is actuated by a punch support which is, in turn, carried by a pair of posts extending below the die plate to permit reciprocal movement of the punch within the die cavity. A core rod has one end disposed within a longitudinal bore formed in the punch, while the other end of the core rod is fixedly mounted to the posts below the punch support.

A cup-shaped tubular housing carried by the posts encloses the punch support, the core rod support, the punch, the core rod, and the posts with the open end of the tubular housing in a fluid sealing abutment with the lower side of the die plate. An actuating arm extending through the core rod support and the bottom of the tubular housing operatively connects the punch support to an external drive means to selectively cause reciprocation of the punch support.

A fluid lubricant reservoir having a predetermined fluid level is connected to the interior of the tubular housing for lubricating the walls of the die cavity during the compacting operation.

3,687,589

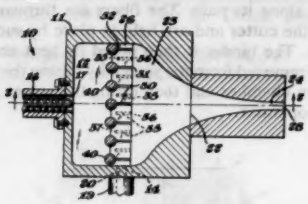
APPARATUS FOR THE CONTROLLED EXTRUSION OF MULTI-COMPONENT SYNTHETIC RESINOUS BODIES

Walter J. Schrenk, Bay City, Mich., assignor to The Dow Chemical Company, Midland, Mich.

Division of Ser. No. 811,275, March 10, 1969, Pat. No. 3,555,128, which is a continuation-in-part of Ser. No. 603,981, Dec. 22, 1966, abandoned. This application July 20, 1970, Ser. No. 56,503

Int. Cl. B29f 3/02

U.S. Cl. 425—109 4 Claims



In extrusion of layered film where a layered stream is discharged from a single die, control of the volume of material passing through the feed ports is obtained by introducing varying mechanical shear rates to at least a portion of the individual layers of the composite stream.

3,687,590

MOLD-CLOSING MEANS, PARTICULARLY FOR DIE-CASTING AND INJECTION MOLDING MACHINES FOR METALS AND SYNTHETICS

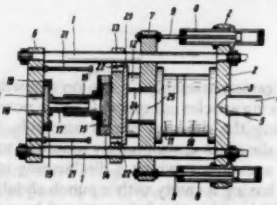
Wilhelm Cyriax, W.R. Neustadter Strasse 81, Kottingbrunn, Austria

Filed Jan. 8, 1970, Ser. No. 1,410

Claims priority, application Germany, Jan. 13, 1969, P 19 91 946.6

Int. Cl. B29f 1/00

U.S. Cl. 425—161 1 Claim



A mold-closing device, particularly for die-casting machines and injection-molding machines for metals and plastics, with a stationary mold-carrier plate mounted on columns, a stationary end plate, a mold-carrier plate movable between these stationary plates from a mold-open position to a mold-closed position, a pressure piece between the mold-carrier plate and the end plate, a pressure box or hydraulic intensifier mounted on the pressure piece for producing the closure pressure and for connecting the end plate with the movable mold-carrier plate only during the casting on injecting operation, at least two piston- and- cylinder units acting between the movable mold-carrier and one of the stationary plates, and a thrust plate transversely slidable on the end plate so as to cover and uncover an aperture provided for the passage therethrough of the pressure piece, the pressure piece including a threaded sleeve or nut and a threaded spindle or ram.

3,687,591

AN INJECTION MOLDING APPARATUS HAVING EJECTOR PINS WITH ORIENTED SHAPING SURFACES FOR PRODUCT REMOVAL

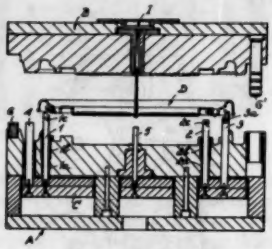
Guiseppe Perego, Via Buonarroti, 20043 Arcore, Italy

Filed July 6, 1970, Ser. No. 52,462

Claims priority, application Italy, April 17, 1970, 23466 A/70

Int. Cl. B29f 1/14

U.S. Cl. 425—249 1 Claim



A two-part injection mold produces plastic articles formed with hook portions, transversely perforated webs, or both. The plastic article is adapted, for example, to form the framework of a playpen or bed for children, and is capable of being disassembled, after molding, into an outer upper portion and a central base portion to which there may be fixed the upper and lower ends of an outer net, the metal supporting legs and, on top, a sun-shade support. One-half of the mold is fitted with pegs which aid in forming the hook and perforated portions of the article, and further serve to eject the finished article from the open mold.

3,687,592

APPARATUS FOR PRODUCING THERMOPLASTIC SYNTHETIC RESIN FOAMED PRODUCTS

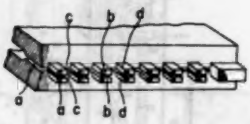
Akira Miyamoto, Shinomiya, and Hiroyuki Akiyama, Tamura, both of, Hiratsuka-shi, Japan, assignors to Mitsutishi Gas Chemical Company, Inc., Tokyo, Japan

Filed Nov. 24, 1969, Ser. No. 879,431

Claims priority, application Japan, Nov. 24, 1969, 43/85553

Int. Cl. B29d 27/00; B29f 3/01

U.S. Cl. 425—376 6 Claims



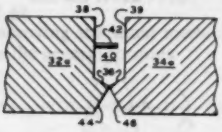
The present disclosure relates to a method and an apparatus for the continuous production of wide and thick plates or sheets of foamed products of foamable molten compositions of thermoplastic synthetic resins containing foaming agents. In carrying out the production of these foams, there are provided dies with a continuous slit and with a number of projections with predetermined intervals on both sides of the slit, in such a manner that concave and convex lips are obtained at the outlet, and the foamable resin is extruded from said dies to produce relatively thick plates or sheets of foamed material.

3,687,593

ALTERNATE PROJECTIONS IN SEALING MEMBER

Dixie E. Gilbert, Bartlesville, Okla., assignor to Phillips Petroleum Company

Filed Jan. 4, 1971, Ser. No. 103,380
Int. Cl. B29d 23/03
U.S. Cl. 425—387 8 Claims



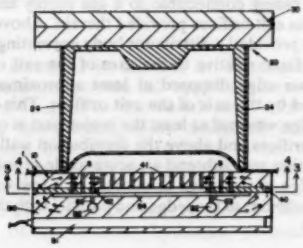
Parison sealing and severing members have small projections which aid in gripping a flattened end of the parison.

3,687,594

APPARATUS FOR FORMING A PLASTIC SHEET

Roger L. Medendorp, Grand Rapids, Mich., assignor to Kirkhof Manufacturing Corporation, Grand Rapids, Mich.

Filed Sept. 21, 1970, Ser. No. 74,082
Int. Cl. B29c 17/04
U.S. Cl. 425—388 6 Claims



An apparatus for forming a plastic sheet by differentially heating certain portions of the sheet of plastic previous to the differential pressure forming operation whereby as the plastic sheet is being formed the flow of plastic in the sheet is controlled. The plastic sheet is placed on a heating surface and a die is placed over the sheet. Heat is applied to the plastic sheet at certain predetermined portions thereof and after being heated to a desired state, a pressure differential is applied to the plastic sheet. As the differential pressure is applied to the sheet the portions which are at a greater degree of temperature flow and stretch more easily and thus the gauge or thickness of predetermined portions of the article being formed can be controlled.

3,687,595

Patent Not Issued For This Number

3,687,596

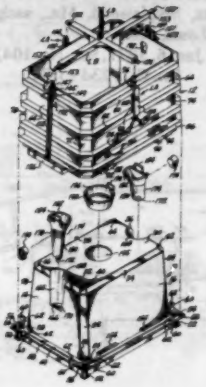
Patent Not Issued For This Number

3,687,597

HOLLOW ARTICLE CASTING APPARATUS

Joseph M. Lavergne, Jr., 1212 E. 85th St., Tacoma, Wash.

Division of Ser. No. 692,940, Dec. 22, 1967, Pat. No. 3,542,914. This application Nov. 18, 1970, Ser. No. 90,751
Int. Cl. B28b 7/10, 7/16
U.S. Cl. 425—438 11 Claims



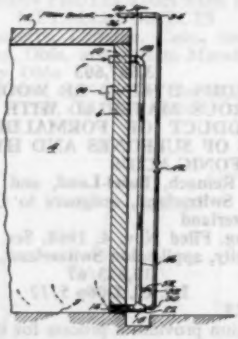
Apparatus for upright casing of the side walls and the top of a hollow article, such as a septic tank, in a single pour, characterized by an outer mold part positionable over an inner mold part. Lever means carried on opposite sides of the outer mold part and operable by a lifting force to exert a separating force between the outer and inner mold parts. Lever means carried by the outer mold parts for locking the molded article to it. In use the outer mold part and the molded article are lifted upwardly together as an assembly and are removed entirely from the inner mold part. The assembly is then set down, the outer mold part is unlocked from the molded article, the outer mold part is then removed from the molded article, and then a bottom is formed in the molded article.

3,687,598

APPARATUS FOR CURING BUILDING BLOCKS

Lonnie J. Estis, Mobile, Ala., assignor to Sepco, Mobile, Ala.

Filed Jan. 22, 1970, Ser. No. 4,989
Int. Cl. F27b 21/02
U.S. Cl. 425—445 2 Claims



Freshly made concrete blocks are placed on racks which are suitably disposed in a kiln and steam is introduced by means of a syphon which communicates with the atmosphere and causes the transmittal of the steam along with air which results in the "green" blocks being capable of withstanding higher temperatures than would otherwise be the case; the elements in the air imparting increased tendency of the cement to set and harden.

3,687,599

Patent Not Issued For This Number

3,687,600

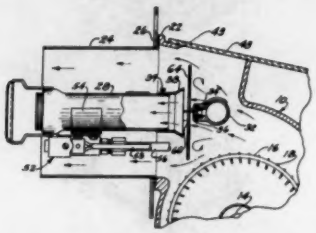
BAFFLE FOR FORCED DRAFT GAS BURNER

Frank A. Gruswitz, Maplewood, Mo., assignor to Emerson Electric Co., St. Louis, Mo.

Filed Jan. 6, 1971, Ser. No. 104,379

Int. Cl. F23d *13/24*

U.S. Cl. 431—114 8 Claims



A forced draft gas burner having a burner tube, a surrounding blast tube, a fuel orifice discharging into the inlet of the burner tube, and a centrifugal blower supplying combustion air to the burner and blast tubes. An air baffle is positioned adjacent the inlet ends of the burner and blast tubes and between the fuel supply orifice and the burner tube, and extends transversely across a considerable portion of the blast tube; the baffle has a central round aperture therein concentric with the burner tube and operative to increase the static pressure and effect a better distribution of air flow through the blast tube to maintain a predetermined ratio of air-fuel flow through the burner tube and to reduce or eliminate audible pulsing of the burner.

3,687,601

Patent Not Issued For This Number

3,687,602

GAS BURNERS

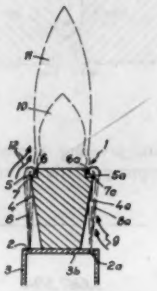
Roger Vignes, Paris, France, assignor to Service National dit: Gaz de France, Paris, France

Filed April 30, 1971, Ser. No. 139,021

Claims priority, application France, April 30, 1970, 7016090

Int. Cl. F23d *13/12*

U.S. Cl. 431—347 18 Claims



A gas burner which provides between the exit orifices and the ignition level a free path for gas jets emanating from the orifices to ensure sufficient aeration of the gas jets. The burner comprises a casing connectible to a gas supply and having a number of gas exit orifices provided therein. Above these orifices there is provided a distributor body presenting a distribution wall inclined relative to the axes of the exit orifices and with its upper edge disposed at least approximately in the plane defined by the axis of the exit orifices. This edge forms part of a ledge whereof at least the major part is on the same side as the orifices and above the distribution wall. The ledge and distribution wall subtend an acute angle at said edge and the other edge of the ledge terminates in a low wall substantially perpendicular to the ledge and parallel with the edge.

CHEMICAL

3,687,603

SIMULTANEOUS DYEING OF WOOL AND COTTON FIBROUS MATERIAL WITH CONDENSATION PRODUCT OF FORMALDEHYDE AND MIXTURE OF SULFONES AND HYDROXYBENZENESULFONIC ACIDS

Heinz Abel, Reinach, Basel-Land, and Melvin Harris, Arlesheim, Switzerland, assignors to Ciba-Geigy AG, Basel, Switzerland

No Drawing. Filed Nov. 4, 1968, Ser. No. 773,326

Claims priority, application Switzerland, Nov. 8, 1967, 15,623/67

Int. Cl. D06p *5/12*

U.S. Cl. 8—23 5 Claims

This invention provides a process for the simultaneous dyeing of wool and cellulosic fibrous material with wool- and substantive dyestuffs in the presence of a fibre-affinic wool resisting agent and hexamethylenetetramine. The wool resisting agents used are condensation products of formaldehyde with a mixture of (a) sulfones containing two hydroxybenzene residues linked to the —SO_2— group and (b) monocyclic hydroxybenzenesulfonic acids. By the present process the deposition of cotton dyestuff on the wool fibre is prevented.

3,687,604

Patent Not Issued For This Number

3,687,605

STABILIZATION OF WOOL THROUGH TREATMENT WITH A REDUCING AGENT AND A POLYMER OR POLYMER FORMING MATERIALS

Larry B. Farmer, Spartanburg, S.C., assignor to Deering Milliken Research Corporation, Spartanburg, S.C.

No Drawing. Filed Mar. 14, 1966, Ser. No. 533,844

Int. Cl. D06m *3/08, 3/10, 15/30*

U.S. Cl. 8—127.6 6 Claims

A two step durable setting in the desired configuration of textile materials containing keratinous fibers comprising (1) an external stabilization and (2) an internal stabilization. The external stabilization involves polymer formation through treatment with a polyisocyanate and an active hydrogen containing polymer. The internal stabilization involves treatment with a reducing agent.

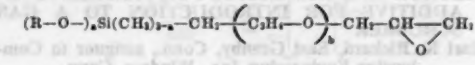
3,687,606

PERMANENT HAIR WAVING BY ARTIFICIALLY SHAPING WITH AN EPOXY-ORGANO-SILANE

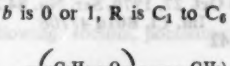
Walter Simmler, Odenthal-Gloebusch, and Hans-Horst Steinbach, Schildgen, Germany, assignors to Farbenfabriken Bayer Aktiengesellschaft, Leverkusen, Germany

No Drawing. Filed Sept. 24, 1970, Ser. No. 75,258
Claims priority, application Germany, Oct. 4, 1969, P 19 50 098.2
Int. Cl. A61k 7/10
U.S. Cl. 8—127.51 3 Claims

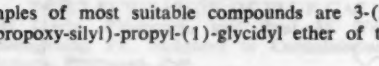
Agents for improving the usual method of waving the human hair have the general formula



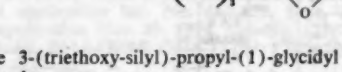
(*a* is 2 or 3, *b* is 0 or 1, R is C_1 to C_6 alkyl or



Examples of most suitable compounds are 3-(methyl-diisopropoxy-silyl)-propyl-(1)-glycidyl ether of the formula



and the 3-(triethoxy-silyl)-propyl-(1)-glycidyl ether of the formula



preferably dissolved in ethanol or isopropanol.

In a preferred process of applying these agents the hair is first shaped, in the usual way, with the aid of a reducing agent which splits disulphide bridges in the keratin in the hair, then, according to the invention, a solution of one of the epoxy-organo-silanes mentioned above in ethanol or isopropanol is applied to the hair. Thereafter, the reduction is reversed in known manner by means of an aqueous hydrogen peroxide solution.

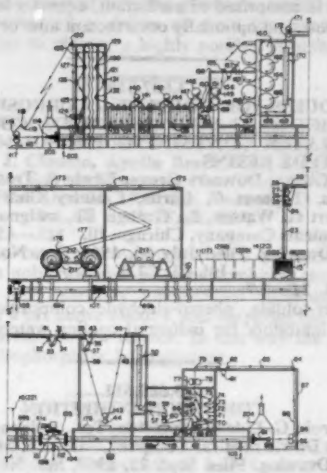
3,687,607

METHOD FOR CONTINUOUS TREATMENT OF BUNDLES OF FILAMENTS AND YARNS WITH STEAM

Masahide Yazawa, Tokyo, Japan, assignor to Kabushiki Kaisha Kobunshi Kako Kenkyujo, Tokyo, Japan

Continuation-in-part of abandoned application Ser. No. 811,560, Mar. 28, 1969. This application Feb. 8, 1971, Ser. No. 113,413
Claims priority, application Japan, June 5, 1968, 43/38,852
Int. Cl. D06c 1/00, 3/16
U.S. Cl. 8—149.1 7 Claims

A high speed high temperature treating process such as dyeing, bleaching and scouring, for elongated fibrous stock comprising continuous filaments or yarns the process comprising, before introducing the fibrous stock into a high temperature and pressure saturated steaming zone through pressure sealing means, subjecting the stock to a preparatory mechanical flattening and straightening step to remove irregularities in the stock, steam stretching the fibrous stock wherein the constituent filaments or yarns are arranged substantially in parallel condition or yarns, and preferably steam stretching beyond the mechanically-straightened length of the stock to substantially completely remove residual slight irregularities in the stock, passing the stock in a similar condition as above through a padding bath, squeezing excess liquid from the padded



stock, and concentrating the flattened fibrous stock into a round tow form.

3,687,608

CORROSION CONTROL

Alfred C. Nestle, Houston, Tex., assignor to Texaco Inc., New York, N.Y.

No Drawing. Filed July 24, 1970, Ser. No. 58,194
Int. Cl. C23f 11/14, 11/18
U.S. Cl. 21—2.5 5 Claims

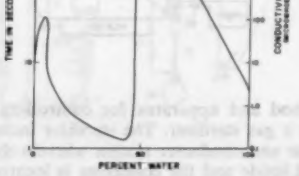
A process for controlling corrosion in sweet (hydrogen sulfide free) environments comprising a treatment of the environment in which corrosion is to be controlled with normally corrosive souring agents in the presence of electrolyte and preferably in the presence of at least one conventional corrosion inhibitor. Optionally, the sweet environment can be pre-treated with the souring agent, or mixtures of the souring agent and the electrolyte and thereafter with corrosion inhibitor.

3,687,609

CORROSION PROTECTION FOR BURIED METALLIC OBJECTS

William B. Gogarty, Littleton, Colo., and William P. Bush, Findlay, Ohio, assignors to Marathon Oil Company, Findlay, Ohio

Filed Nov. 4 ,1969, Ser. No. 873,863
Int. Cl. C23f 11/00
U.S. Cl. 21—2.5 12 Claims



Process for inhibiting electrical corrosion by increasing the electrical resistance of the soil surrounding a metallic

object by addition of water-displacing high resistance micellar dispersions to the surrounding soil. The micellar dispersion is comprised of surfactant, aqueous medium, hydrocarbon, and optionally cosurfactant and/or electrolyte.

3,687,610

PROCESS FOR INHIBITING CORROSION OF METALLIC SURFACES WITH COOLING WATER CONTAINING PHENOL - ALDEHYDE RESINS

Ian T. Gilson, Downers Grove, Edwin S. Troscinski, Oak Lawn, Thomas C. Curtis, Country Club Hills, and Robert G. Watson, La Grange, Ill., assignors to Nalco Chemicals Company, Chicago, Ill.

No Drawing. Filed July 30, 1969, Ser. No. 846,227
Int. Cl. C23f *11/10*
U.S. Cl. 21—2.7 **10 Claims**

Water-soluble, phenol-aldehyde compositions as corrosion inhibitors for industrial cooling waters.

3,687,611

CORROSION INHIBITION

Harold G. Liddell, Angleton, Tex., assignor to The Dow Chemical Company, Midland, Mich.

No Drawing. Filed Sept. 25, 1969, Ser. No. 861,184
Int. Cl. B27k *3/40;* **C23f** *11/14*
U.S. Cl. 21—2.7 **4 Claims**

A method for preventing corrosion of ferrous metals in contact with water, a phenolic compound and methylene chloride by maintaining in contact with said ferrous metal, water, phenolic compound and methylene chloride a small but effective amount of an amine selected from the group consisting of morpholine or an amine having the formula

$$\begin{array}{l} RNR' \\ | \\ R'' \end{array}$$

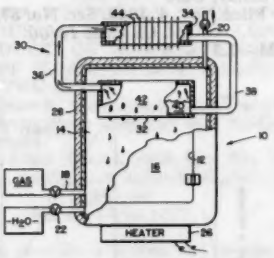
wherein R represents an alkyl radical, a hydroxyl alkyl radical, an aminoalkyl radical or a cyclohexyl radical and R' and R'' each represent H or an alkyl radical having from 2 to 8 carbon atoms.

3,687,612

METHOD OF CONTROLLING RELATIVE HUMIDITY IN GASEOUS STERILIZERS

Robert R. Ernst, Rochester, N.Y., assignor to Sybron Corporation, Rochester, N.Y.

Filed Oct. 12, 1970, Ser. No. 79,960
Int. Cl. A61l *1/00, 13/00*
U.S. Cl. 21—58 **4 Claims**



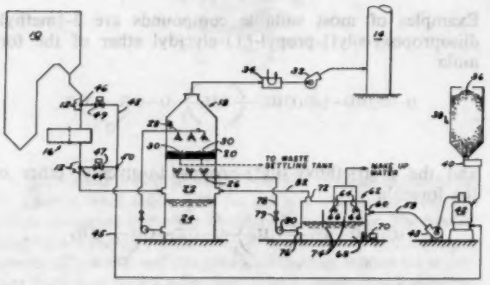
A method and apparatus for controlling relative humidity in a gas sterilizer. The sterilizer includes a closed evaporator and condenser system wherein the evaporator is located inside and the condenser is located outside the sterilizing chamber. The closed system contains a fluid having a boiling point substantially equal to that saturation temperature or dew point within the sterilizer, which corresponds to the desired relative humidity at the operating temperature of the sterilizer. Since the saturation temperature is below the operating temperature of the sterilizer, the fluid will be constantly boiling which maintains the evaporator at the dew point temperature so that the moisture in excess of the amount necessary to provide the desired relative humidity will condense on the surface of the evaporator. Condensation and reevaporation of this excess maintains the relative humidity within the sterilizer substantially constant.

3,687,613

METHOD AND APPARATUS FOR PREPARING AN ADDITIVE FOR INTRODUCTION TO A GAS SCRUBBER

Earl K. Rickard, East Granby, Conn., assignor to Combustion Engineering, Inc., Windsor, Conn.

Filed Oct. 27, 1970, Ser. No. 84,309
Int. Cl. B01d *47/06*
U.S. Cl. 423—242 **9 Claims**



A method and apparatus for preparing an additive for use in reacting with sulfur bearing flue gases in a wet scrubber. The additive in the solid state is entrained in a gas stream, is transported to a slurry make-up area, is contacted with water to wet and disentrain the additive to form a slurry and subsequently is conveyed in slurry form to the wet scrubber where it reacts with sulfur oxides in the flue gas admitted to the scrubber. The additive transporting gas, after most of the additive has been removed in the slurry make-up area, is conducted to the flue gas admitting portion of the scrubber.

In the preferred embodiment of the invention, the additive transporting gas is provided by tapping off a portion of the unscrubbed flue gas prior to its admission into the wet scrubber. A coarse, uncalcined additive is pulverized in a pulverizing mill and the flue gas stream is passed through the mill to dry and entrain the additive.

3,687,614

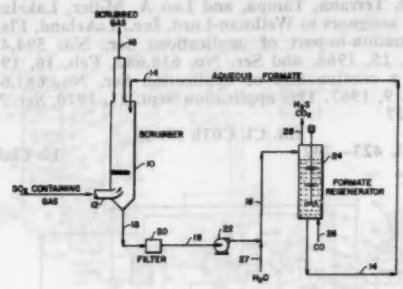
CONVERSION TO FORMATE IN ONE STAGE OF THIOSULFATE FORMED IN REMOVAL OF SULFUR DIOXIDE FROM GASES WITH FORMATE

Paul M. Yavorsky, Monongahela, and Everett Gorin, Pittsburgh, Pa., assignors to Consolidation Coal Company, Pittsburgh, Pa.

Continuation-in-part of application Ser. No. 879,224, Nov. 24, 1969, now Patent No. 3,584,042, which is a continuation-in-part of application Ser. No. 667,479, Sept. 13, 1967. This application Mar. 29, 1971, Ser. No. 128,750
Int. Cl. B01d *53/34;* **C01b** *17/64;* **C01c** *53/06*
U.S. Cl. 423—243 **5 Claims**

Sodium, potassium, or ammonium thiosulfate is converted in one stage to the corresponding formate and H_2S

by heating the thiosulfate to an elevated temperature above 475° F. in the presence of carbon monoxide, steam, and



one of the following: sodium, potassium, and ammonium formates.

3,687,615

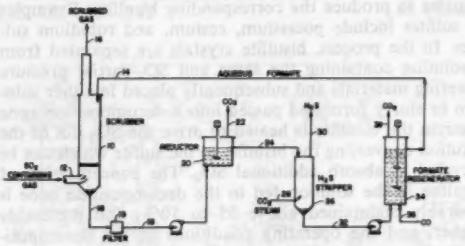
DESULFURIZATION OF FLUE GAS

Everett Gorin, Pittsburgh, and Paul M. Yavorsky, Monongahela, Pa., assignors to Consolidation Coal Company, Pittsburgh, Pa.

Continuation of abandoned application Ser. No. 879,223, Nov. 24, 1969, which is a continuation-in-part of abandoned application Ser. No. 667,479, Sept. 13, 1967. This application Mar. 29, 1971, Ser. No. 128,784

Int. Cl. B01d *53/34;* **C01b** *17/64;* **C07c** *53/06*

U.S. Cl. 423—243 **6 Claims**



Removal of sulfur dioxide from hot flue gas by passing the flue gas in contact with potassium formate, sodium formate, or ammonium formate, in either a molten state or in aqueous solution, at a temperature above 140° F., whereby the sulfur dioxide and the formate react to form principally thiosulfate.

3,687,616

Patent Not Issued For This Number

3,687,617

PROCESS FOR REDUCING THE THIOUREA CONTENT OF ALKALI- AND ALKALINE EARTH-METAL RHODANIDES

Hans-Dieter Rupp, Mozartstrasse 1, Erlenbach, Germany; Gerhard Meyer, Blumenstrasse 26, Obernburg Germany; and Helmut Mägerlein, Seeweg 48, Erlenbach, Germany

No Drawing. Filed Sept. 1, 1970, Ser. No. 68,764

Claims priority, application Germany, Sept. 6, 1969, P 19 45 178.6

Int. Cl. C01c *3/20*

U.S. Cl. 423—178 **9 Claims**

The content of thiourea as an impurity in alkali and alkaline earth metal rhodanides is reduced by heating the impure or crude rhodanide in an aqueous solution at elevated pressures and temperatures to convert most of the thiourea into gaseous reaction products, which can then be easily separated or driven off from the reaction mixture in order to recover a highly purified rhodanide.

3,687,618

RECOVERY OF AMMONIA FROM EXIT GASES OF AN AMMONIUM POLYPHOSPHATE PLANT

Herbert J. Clausen, Apollo Beach, Fla., assignor to Cities Services Company, New York, N.Y.

Filed Dec. 22, 1970, Ser. No. 100,733

Int. Cl. C01b *25/28, 25/38*

U.S. Cl. 423—314 **4 Claims**

Ammonia can be recovered from the exit gases of an ammonium polyphosphate plant by scrubbing the reactor exit gases with partially ammoniated superphosphoric acid having a pH above about 3, and recycling the product obtained thereby to the reactor. In this way the production of orthophosphate is minimized.

3,687,619

METHOD OF PREPARING ZINC HYDROSULFITE

Virgil L. Hansley, Stuart Schott, and Louis F. Moormeier, Cincinnati, Ohio, assignors to National Distillers and Chemical Corporation, New York, N.Y.

No Drawing. Continuation-in-part of application Ser. No. 810,063, Jan. 15, 1969, which is a division of application Ser. No. 494,243, Oct. 8, 1965. This application Apr. 1, 1971, Ser. No. 130,522

Int. Cl. C01b *17/66*

U.S. Cl. 423—109 **3 Claims**

An improved method for the preparation of stable zinc hydrosulfite solutions wherein reactive zinc is treated with sulfur dioxide in an aqueous solution, the improvement utilizing reactive zinc in the form of a calcium-sodium-zinc alloy containing about 0.2 to 1.0% by weight of calcium, about 0.3 to 3.0% by weight of sodium, and from about 96 to 99.5% by weight of zinc.

3,687,620

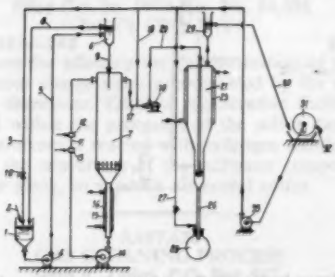
MANUFACTURE OF AMMONIUM SULFATE FROM GYPSUM

Johan F. Witte, 156 Nieuwendammerdijk, Amsterdam, Netherlands, and Jacobus J. de Wit, 74 Populierenlaan, Amstelveen, Netherlands

Continuation-in-part of application Ser. No. 708,849, Feb. 28, 1968. This application Sept. 18, 1970, Ser. No. 73,339

Int. Cl. C01c *1/24;* **C01f** *11/18*

U.S. Cl. 423—548 **4 Claims**



Ammonium sulfate is manufactured from gypsum by a continuous process in which an aqueous flow of material

is continously recycled along a predetermined closed circuit defined by a conduit and a wider vessel connected in series. A fresh aqueous gypsum slurry comprising a dispersion of finely divided gypsum in an ammonium sulfate solution is continuously introduced into the flowing material and followed by continuous injection of carbon dioxide gas and gaseous ammonia which react with the gypsum to form calcium carbonate and ammonium sulfate. Any reaction heat is absorbed by a cooler to maintain the temperature between desired limits. Then, a retardation of material flow is caused by passing the material through the vessel of the circuit and so allowing crystals of calcium carbonate to grow under controlled conditions. After completion of crystal growth, a portion of the flowing material is continuously withdrawn from its circuit and the solid calcium carbonate is removed from this portion in order to obtain an ammonium sulfate solution which may be used as such or worked up to solid ammonium carbonate.

3,687,621

PROCESS FOR THE PRODUCTION OF CYANOGEN

Friedhelm Geiger, Offenbach, Theodor Lussling and Ferdinand Theissen, Grossauheim, and Wolfgang Weigert, Offenbach, Germany, assignors to Deutsche Gold- und Silber-Scheideanstalt vormals Roessler, Frankfurt am Main, Germany

No Drawing. Filed May 15, 1970, Ser. No. 37,864
Claims priority, application Germany, May 31, 1969, P 19 27 847.8
Int. Cl. C01c *3/00*
U.S. Cl. 423—384 **11 Claims**

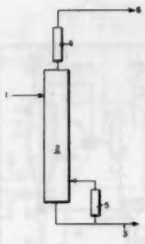
Cyanogen is prepared by reacting hydrogen cyanide and chlorine in the presence of a surface active catalyst. The product still containing hydrogen cyanide is treated with 1 to 1.1 mole of chlorine per mole of hydrogen cyanide remaining at 195 to 800° C. for 10 to 0.01 second and in the presence of the surface active catalyst, preferably activated carbon.

3,687,622

HIGH PRESSURE PURIFICATION OF HYDROGEN FLUORIDE

George James Garris, Deer Park, Tex., assignor to E. I. du Pont de Nemours and Company, Wilmington, Del.

Continuation-in-part of application Ser. No. 851,349, Aug. 19, 1969. This application Nov. 30, 1970, Ser. No. 93,892
Int. Cl. C01b *7/22*
U.S. Cl. 423—488 **5 Claims**



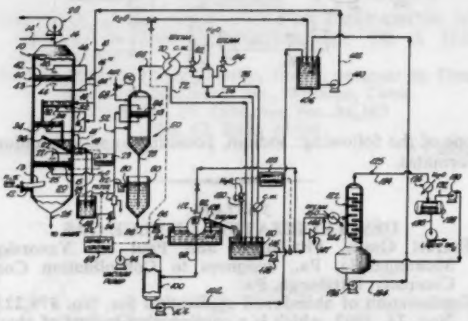
Anhydrous hydrogen fluoride containing less than about 3000 parts per billion of arsenic is produced by distilling industrial grade or crude hydrogen fluoride at a pressure greater than 115 p.s.i.a. At pressures above 165 p.s.i.a., the resulting hydrogen fluoride contains less than about 100 parts per billion of arsenic.

3,687,623

PROCESS FOR RECOVERING SULFUR DIOXIDE FROM A GAS CONTAINING SAME

Jack D. Terrana, Tampa, and Leo A. Miller, Lakeland, Fla., assignors to Wellman-Lord, Inc., Lakeland, Fla.

Continuation-in-part of applications Ser. No. 594,431, Nov. 15, 1966, and Ser. No. 616,682, Feb. 16, 1967, and a continuation of application Ser. No. 681,643, Nov. 9, 1967. This application Sept. 11, 1970, Ser. No. 71,327
Int. Cl. C01b *17/60*
U.S. Cl. 423—242 **12 Claims**



Process for the decomposition of a metal bisulfite which is a precursor of SO_2 to regenerate SO_2, especially for use in a system involving reaction between SO_2 in a gas with a sulfite to produce the corresponding bisulfite. Examples of sulfites include potassium, cesium, and rubidium sulfites. In the process, bisulfite crystals are separated from a solution containing the same and SO_2-partial pressure lowering materials and subsequently placed in either solution or slurry form and passed into a decomposition zone wherein the bisulfite is heated to drive the SO_2 out of the solution converting the bisulfite to the sulfite which can be recycled to absorb additional SO_2. The concentration of bisulfite in the solution fed to the decomposition zone is desirably maintained above 35 to 50%, and preferably higher, and the operating conditions of the decomposition zone are controlled to provide a high partial pressure of sulfur dioxide in the solution and an inert gas is advantageously employed whereby high conversions of bisulfite to sulfite can be obtained.

3,687,624

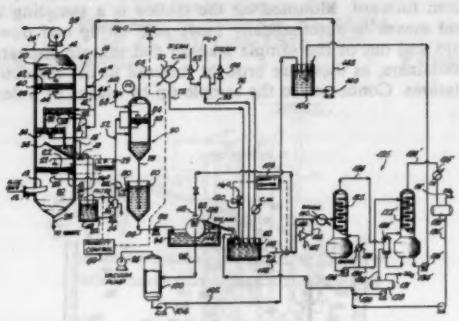
PROCESS FOR RECOVERING SULFUR DIOXIDE FROM A GAS CONTAINING SAME

Jack D. Terrana, Tampa, and Leo A. Miller, Lakeland, Fla., assignors to Wellman-Lord, Inc., Lakeland, Fla.

Continuation-in-part of applications Ser. No. 594,431, Nov. 15, 1966, and Ser. No. 616,682, Feb. 16, 1967, and a continuation of application Ser. No. 681,662, Nov. 9, 1967. This application Sept. 11, 1970, Ser. No. 71,338
Int. Cl. C01b *17/60*
U.S. Cl. 423—242 **14 Claims**

Process for the decomposition of a metal bisulfite which is a precursor of SO_2 to regenerate SO_2, especially for use in a system involving reaction between SO_2 in a gas with a sulfite to produce the corresponding bisulfite. Examples of sulfites include potassium, cesium, and rubidium sulfites. In the process, bisulfite crystals are separated from a solution containing the same and SO_2-partial pressure lowering materials and subsequently placed in either solution or slurry form and passed into a decomposition zone wherein the bisulfite is heated to drive the SO_2 out of the solution converting the bisulfite to the sulfite which can be recycled to absorb additional SO_2. The concentration of bisulfite in

the solution fed to the decomposition zone is desirably maintained above 35 to 50%, and preferably higher, and the operating conditions of the decomposition zone are

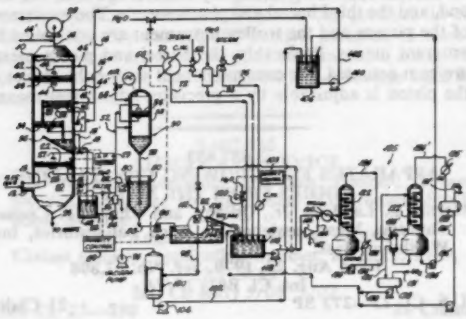


controlled to provide a high partial pressure of sulfur dioxide in the solution whereby high conversions of bisulfite to sulfite can be obtained.

3,687,625
RECOVERY OF SULFUR DIOXIDE FROM WASTE GAS

Jack D. Terrana, Tampa, and Leo A. Miller, Lakeland, Fla., assignors to Wellman-Lord, Inc., Lakeland, Fla.

Continuation of application Ser. No. 681,775, Nov. 9, 1967. This application Sept. 14, 1970, Ser. No. 72,175
Int. Cl. C01b *17/56*
U.S. Cl. 423—242 **45 Claims**



Sulfur dioxide is recovered from gases containing it by contacting the gas with aqueous cesium or rubidium sulfites to produce the corresponding bisulfite and subsequently separating the bisulfite and SO_2-partial pressure lowering materials to obtain purer bisulfite or pyrosulfite which can be decomposed to release sulfur dioxide.

3,687,626
PROCESS FOR THE PRODUCTION OF SULFURYL FLUORIDE

Cyril Woole, Morristown, N.J., and Richard O. Michael, Akron, Ohio, assignors to Allied Chemical Corporation, New York, N.Y.

No Drawing. Filed Apr. 2, 1971, Ser. No. 130,799
Int. Cl. C01b *17/45*
U.S. Cl. 423—468 **6 Claims**

Sulfuryl fluoride is produced by a process wherein sulfuryl chloride, sulfuryl bromofluoride or sulfuryl chlorofluoride are reacted with ammonium bifluoride at temperatures above the boiling point of said sulfuryl compound reactant.

3,687,627
STABILIZED HYDROGEN PEROXIDE SOLUTIONS

Neil J. Stalter, Wilmington, Del., assignor to E. I. du Pont de Nemours and Company, Wilmington, Del.

No Drawing. Filed June 25, 1970, Ser. No. 49,946
Int. Cl. C01b *15/02*; C09k *3/00*
U.S. Cl. 423—271 **20 Claims**

Acidic stabilized hydrogen peroxide solutions are disclosed which contain from about 10 to 90% H_2O_2, a soluble stannate stabilizer, a soluble magnesium salt such as Epsom salt, at a concentration of at least 10 grams per liter, and an alkylidene diphosphonic acid or a soluble salt thereof at a concentration sufficient to prevent precipitation of the stannate by the magnesium salt. In preferred embodiments, the hydrogen peroxide solution will also contain a soluble pyrophospate or fluosilicate. When diluted with water to peroxide concentrations generally employed in most use applications, the diluted solutions require only the addition of an alkali to provide alkaline peroxide solutions containing a magnesium compound which is an effective stabilizer for the alkaline peroxide solutions during use, e.g. in bleaching applications.

3,687,628
METHOD OF PURIFYING SULFUR FROM ARSENIC

Igor Mikhailovich Nelen, Sadovo-Chernogryazskaya ulitsa 13/3, kv. 69, Moscow, U.S.S.R., and Vladimir Ivanovich Goryachkin, Zheleznodarozhnaya ulitsa 16, poselok Nikolskoe, Moskovskaya oblast, U.S.S.R.

No Drawing. Filed Sept. 11, 1970, Ser. No. 71,341
Int. Cl. C01b *17/14*
U.S. Cl. 423—578 **4 Claims**

A method of purifying sulphur from arsenic, according to which molten sulphur is treated with calcium oxide or calcium hydroxide in the presence of a sulphur immiscible phase an aqueous solution of inorganic salts, having a boiling point higher than the melting point of sulphur, the anions of said aqueous solution forming soluble compounds with calcium, said sulfur-immiscible phase preferably wetting any excess solid calcium oxide or hydroxide or the solid calcium reaction product with arsenic.

Said method of purifying sulphur obviates the formation of arseniferous waste solutions, provides for the concentration of arsenic in a solid, compact, dustless product which is convenient for transportation and burial, and requires conventional (non-autoclave) equipment for its realization.

3,687,629
HYDROCARBON DESULFURIZATION AND SULFUR RECOVERY

Charles H. Watkins, Arlington Heights, Ill., assignor to Universal Oil Products Company, Des Plaines, Ill.

Filed Oct. 26, 1970, Ser. No. 84,091
Int. Cl. C01b *17/06*
U.S. Cl. 423—244 **6 Claims**

A process for effecting the desulfurization of a hydrocarbonaceous charge stock accompanied by the recovery of sulfur therefrom. Catalyst regeneration facilities are integrated within the process, and the sulfur dioxide resulting therefrom is reacted with hydrogen sulfide, resulting from the conversion of the sulfurous compounds in the charge stock, to produce elemental sulfur.

3,687,630
GAS CLEANING PROCESS

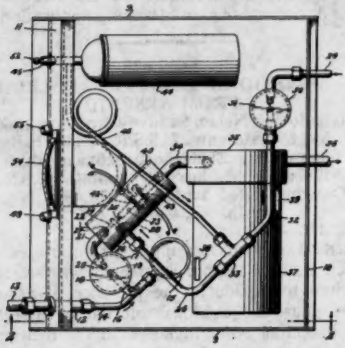
John P. Tailor, P.O. Box 587, Davenport, Iowa 52805

Filed July 24, 1968, Ser. No. 747,266
Int. Cl. B01d *53/34*
U.S. Cl. 423—242 **7 Claims**

Sulfur oxides and fly ash are removed from combustion gases employing a two stage scrubber-absorption

system. In the first stage inwardly swirling contaminated gas is passed through a downwardly flowing film of washing liquid on each side of a cylindrical perforate baffle. In the second stage the swirling gas is passed inwardly through two films of absorbent liquid flowing downwardly on the outside of a cylindrical perforate baffle and on the inside of a concentric perforate baffle within the first baffle. Elemental sulfur or sulfur compounds may be recovered in the process.

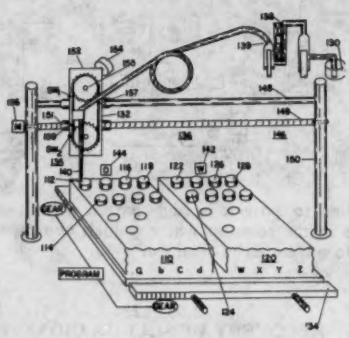
3,687,631
METHOD AND EQUIPMENT FOR CATALYTIC ANALYSIS OF GASES
William C. Zegel, Doylestown, Pa., assignor to Scott Research Laboratories, Inc., Plumsteadville, Pa.
Filed June 3, 1969, Ser. No. 830,012
Int. Cl. G01n *27/16*
U.S. Cl. 23—232 E **9 Claims**



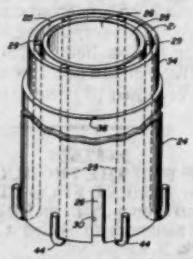
Equipment for catalytic analysis of gases, especially catalytic combustion analysis of internal combustion engine exhaust gases, comprising a combustion chamber formed in a cylindrical mass of metal and having an external heating jacket, the chamber having inlets for the gas to be analyzed and for oxygen for combustion, and further having an outlet connected with a pump for drawing the gases through the chamber. A thermally responsive catalytic element is positioned in the combustion chamber and means are provided for indicating changes in electrical resistance of the catalytic element and thereby indicating the quantity of the gas constituent being burned in the chamber. The equipment further includes a gas scrubber employing a basic material having limited solubility in water, through which the gas is passed before entering the combustion chamber, to effect separation of moisture, acid gas constituents, and also particulates, including carbonaceous and lead particulates from the exhaust gas before entry into the combustion chamber.

3,687,632
SYSTEM FOR TRANSFERRING LIQUIDS BETWEEN CONTAINERS
Samuel Natelson, Chicago, Ill., assignor to Robe Scientific Corporation, Santa Ana, Calif.
Continuation-in-part of applications Ser. No. 845,992, July 30, 1969, and Ser. No. 874,824, Nov. 7, 1969. This application Dec. 4, 1970, Ser. No. 95,305
Int. Cl. B65b *43/54*; G01n *1/14*
U.S. Cl. 23—259 **15 Claims**

Sample transfer system wherein there is a fixed overhead travel path with defined sample take-up and sample discharge stations along said travel path. A trolley is mounted on and disposed for movement of a lift mechanism along said travel path. First and second group of containers are simultaneously moved up to the sample take-up and sample discharge stations by moving a platform forward. Mounted on the trolley is a sampling tip and means to automatically move said tip up and down, into and out of the sample take-up and sample discharge containers, as these are brought forward to the respective stations. Connected to the sample tip by means of a flexible tube are a first barrel and piston means to acquire and eject a liquid sample from the sample take-up container, and a second and third barrel and piston means connected in series with the first barrel and piston means. In addition a valve is supplied to selectively connect the first, the second, and the third barrel and piston means. The movement of the pistons and the trolley movement are controlled by program means. Preferably, the barrel and piston means are cam actuated, the cam movement setting the stroke of the piston is adjustable by a precision adjustment means.



3,687,633
APPARATUS FOR GROWING CRYSTALLINE BODIES FROM THE MELT
Harold E. La Belle, Jr., Quincy, and Charles J. Cronan, Taunton, Mass., assignors to Tyco Laboratories, Inc., Waltham, Mass.
Filed Aug. 28, 1970, Ser. No. 67,808
Int. Cl. B01j *17/18*
U.S. Cl. 23—273 SP **21 Claims**



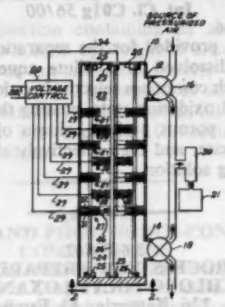
The invention is an improvement in apparatus for growing crystalline bodies from the melt. The apparatus comprises a novel crucible arrangement and a novel "die" assembly which determines the cross-sectional shape of the crystalline body.

3,687,634

APPARATUS FOR PREPARING OXYGEN FROM AIR

George H. Bancroft, Kansas City, Mo., assignor to The Bendix Corporation

Filed Aug. 20, 1970, Ser. No. 65,554
Int. Cl. B01j 7/00; C01b 13/02
U.S. Cl. 23—281 9 Claims



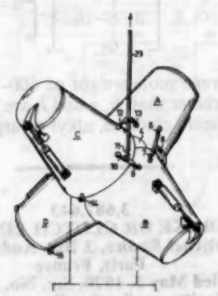
An apparatus for extracting oxygen from air which includes a housing having a plurality of containers located on a plurality of support members. The containers are staggered with respect to each other and each contains a heating element and is filled with crystals of barium oxide which are retained therein by screens located at the top and bottom of the container. When the temperature of the barium oxide is raised to 1200°–1400° F., pressurized air reacts with the granular barium oxide to form barium peroxide. A regulating valve connected to a vacuum source is utilized to lower the pressure in the chamber thereby causing the barium peroxide to release oxygen and revert to its original barium oxide state. The released oxygen is then transmitted to a storage tank for later use.

3,687,635

AUTOCLAVE DEVICE

Endel Wijard, Sodertalje, and Jan Odsvall, Tyreso, Sweden, assignors to Aktiebolag Electrodius, Stockholm, Sweden

Filed Aug. 13, 1970, Ser. No. 63,498
Claims priority, application Sweden, Aug. 22, 1969, 11,715/69
Int. Cl. B01j 3/00, 3/02
U.S. Cl. 23—290 14 Claims



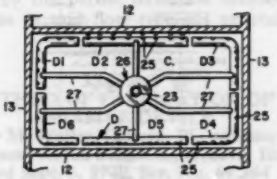
An autoclave device provided with different pressure chambers between which goods to be treated can be transferred in a predetermined direction of flow without the necessity of equalizing the pressure during the treatment in one chamber to ambient atmospheric pressure before transferring the goods to a next chamber. This new device enables an autoclave process to be performed continuously and even automatically with considerable savings in steam consumption.

3,687,636

WALL CLEANING IN A CRYSTALLIZATION VESSEL

Francis Dambrine, Marcq-en-Baroeul, Jean-Claude Giorgi and Jacques de Cremoux, Lille, France, assignors to Société Fives Lille-Cail, Paris, France

Continuation of application Ser. No. 656,842, July 28, 1967. This application Mar. 2, 1970, Ser. No. 14,792
Claims priority, application France, July 28, 1966, 71,172
Int. Cl. B01d 9/00; B08b 3/08; F28g 9/00
U.S. Cl. 23—273 R 7 Claims



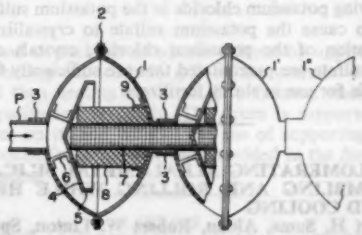
An evaporating tank having a plurality of cells in which a saturated solution is crystallized. Each cell is provided with a set of ducts for irrigating and preventing soiling of the cell side walls, each duct irrigating only a predetermined portion of the perimetric length of the walls. A distributor valve delivers unsaturated solution individually and successively to the respective ducts in each set, so that only a predetermined side wall portion of each cell is irrigated at a time by the total amount of unsaturated solution available for that cell.

3,687,637

COMBINED SILENCER AND EXHAUST GAS CLEANER

Saburo Okamura, % Hibiya Bussan Co., Ltd., 2 banchi 1-chome Yurakucho, Chiyoda-ku, Tokyo, Japan

Filed Sept. 14, 1970, Ser. No. 71,975
Claims priority, application Japan, Sept. 18, 1969, 44/74,268
Int. Cl. B01j 9/04; F01n 3/14
U.S. Cl. 23—288 F 11 Claims



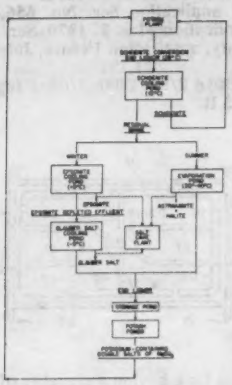
A combined silencer and exhaust gas cleaner comprising a plurality of diffusing and expanding chambers connected in series to an exhaust gas inlet pipe. Each chamber preferably comprises separable bowl-shaped shells. A conical baffle plate is disposed internally of each chamber. Inner and outer coaxial cylindrical wire net tubes are supported by the baffle plate and contain a catalyst therein for absorbing the harmful components contained in the exhaust gas.

3,687,638

PROCESS FOR RECOVERING SODIUM AND SULFATE VALUES FROM SCHOENITE-CONVERSION END LIQUORS

Ulrich E. G. Neitzel, Ogden, Utah, assignor to Great Salt Lake Minerals and Chemicals Corporation, New York, N.Y.

Filed Nov. 20, 1968, Ser. No. 777,359
Int. Cl. B01d 9/00
U.S. Cl. 23—296 16 Claims



A high-grade crystal crop, usually schoenite, is recovered from schoenite-conversion end liquor for recycle to the potassium sulfate plant that produces the end liquor. The resulting residual brine is treated to recover high-sulfate, low-potassium crystal crops suitable for use as feed material for the production of salt cake (sodium sulfate).

3,687,639

PRODUCTION OF FINELY DIVIDED POTASSIUM SULFATE CRYSTALS

Jan R. Barlow, Moss Point, Miss., and Herbert P. Pursell, Libertyville, Ill., assignors to International Minerals & Chemical Corporation

No Drawing. Filed May 25, 1970, Ser. No. 40,373
Int. Cl. C01d 5/00
U.S. Cl. 23—300 4 Claims

A process of producing finely divided potassium sulfate crystals suitable for use in slurry fertilizers from an aqueous solution containing potassium sulfate which comprises dissolving potassium chloride in the potassium sulfate solution to cause the potassium sulfate to crystallize. Upon dissolution of the potassium chloride, crystals of potassium sulfate are precipitated that are sufficiently fine to be suitable for use in slurry fertilizers.

3,687,640

AGGLOMERATING ALKALI METAL SILICATE BY TUMBLING AND ROLLING WHILE HEATING AND COOLING

Robert H. Sams, Aldan, Robert W. Linton, Springfield, and Helmut H. Weldes, Havertown, Pa., assignors to Philadelphia Quartz Company, Philadelphia, Pa.

No Drawing. Filed Jan. 18, 1971, Ser. No. 107,444
Int. Cl. B01j 2/00, 2/12; C01b 33/32
U.S. Cl. 23—313 7 Claims

Hydrated, soluble alkali metal silicate particles are agglomerated by tumbling during the introduction of limited additional moisture and/or heat, forming granules of desired larger size and having preferred density, dissolving, strength, and free-flowing characteristics for uses such as in detergent formulations.

3,687,641

SEPARATION AND RECOVERY OF AMERICIUM FROM CURIUM AND OTHER ELEMENTS

Fletcher L. Moore, Knoxville, Tenn., assignor to the United States of America as represented by the United States Atomic Energy Commission

Continuation-in-part of application Ser. No. 780,101, Nov. 29, 1968, now Patent No. 3,615,268. This application Mar. 9, 1971, Ser. No. 122,371
Int. Cl. C01g 56/00
U.S. Cl. 423—6 3 Claims

A method is provided for the separation of americium from curium dissolved in a dilute aqueous solution of nitric acid which comprises selectively oxidizing the americium to the +5 oxidation state, passing the resultant solution through a porous packed column of crystalline zirconium phosphate, and then selectively eluting an americium-containing solution.

3,687,642

PROCESS FOR PREPARING CHLORO-POLYSILOXANES

Gotz Koerner, 126 Kantorie, 43 Essen, Germany, and Gerd Rossmy, 27 Barkhorstrucken, 43 Essen-Werden, Germany

No Drawing. Filed May 19, 1971, Ser. No. 145,047
Int. Cl. C01b 33/00, 33/20; C07f 7/08
U.S. Cl. 423—342 8 Claims

Process of preparing compounds of the general formula

$$R-Si-O_{\frac{3-a}{2}}$$
$$Cl_a$$

wherein a=0.5 to 1.1 and R is hydrogen, chlorine, alkyl or aryl, by subjecting silanes of the general formula $RSiCl_3$ to hydrolysis with tertiary alcohols as hydrolyzing agents. The tertiary alcohol is added in dropwise manner to the silanes at temperatures between about 10° C.–150° C., preferably in the presence of an inert solvent. Less than 0.9 mole of tertiary alcohol per mole of silane are used. Unreacted silane as well as t-alkylchloride, which is formed as by-product, and the solvent are removed by distillation. The compounds are hydrophobing agents for a variety of purposes and starting materials for hardeners of silicone rubbers.

The process results in the formation of novel compounds of the formula

and

$$[R-Si-O_{1.5}]_g \left[\begin{matrix} Cl \\ | \\ R-Si-O_{0.5} \\ | \\ Cl \end{matrix} \right]_g \left[R-Si-O_{1.5} \right]_h$$
$$\quad\quad\quad

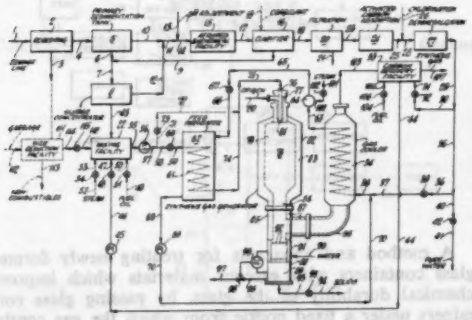
3,687,644
GASOLINE COMPOSITIONS
David J. Delafield, Abingdon, Alan H. Edwards, Wantage, and Keith Owen, Wallingford, England, assignors to Esso Research and Engineering Company
Filed May 28, 1970, Ser. No. 41,323
Claims priority, application Great Britain, June 6, 1969, 28,835/69
Int. Cl. C10l *1/18, 1/22*
U.S. Cl. 44—56 29 Claims

Gasoline composition containing as anti-icing additives 0.00001% to 0.02% by weight of a mono- or polycarboxylic acid, or an anhydride, ester, amide, imide thereof; and 0.01% to 5% by weight of an alcohol, glycol or polyol. Optionally, an ester of an alkoxylated phenol-aldehyde resin is also present. Concentrates of these additives are described.

3,687,645
NITROGEN- AND PHOSPHORUS-CONTAINING COMPOSITIONS
Clark Ober Miller, Willoughby Hills, Ohio, assignor to The Lubrizol Corporation, Wickliffe, Ohio
No Drawing. Continuation-in-part of application Ser. No. 757,781, Sept. 5, 1968. This application Mar. 17, 1971, Ser. No. 125,323
Int. Cl. C01l *1/26*
U.S. Cl. 44—63 11 Claims

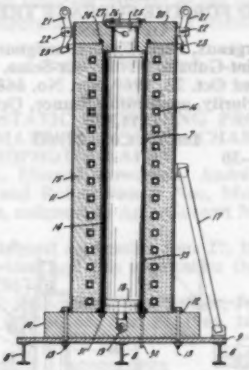
Compositions which are useful as gasoline additives to decrease carburetor icing and water susceptibility and to provide detergency to decrease deposits in the carburetor throttle area are prepared by reacting, at a temperature below about 100° C., (A) a phosphoric acid mono- or diester; (B) an alkylene polyamine; and (C) the reaction product of an aliphatic carboxylic acid having at least about 12 carbon atoms, or a lower alkyl ester thereof, with an alkylene polyamine and an aliphatic epoxide having 2–4 carbon atoms or with an N-hydroxyalkyl-substituted alkylene polyamine.

3,687,646
SEWAGE DISPOSAL PROCESS
Albert Brent, Dix Hills, New York, N.Y., and Charles F. Teichmann, Houston, Tex., assignors to Texaco Development Corporation, New York, N.Y.
Filed Dec. 21, 1970, Ser. No. 100,107
Int. Cl. C01j *3/00, 3/16*
U.S. Cl. 48—209 12 Claims



Sewage is converted into a suseful non-polluting product gas, e.g. synthesis gas or fuel gas by dewatering municipal sanitary sewage, producing a thickened sludge. The thickened sludge is mixed with a fluid selected from the group consisting of H_2O, liquid hydrocarbon fuel, particulate carbon slurries in water or in a liquid hydrocarbon fuel is produced subsequently in the process, and mixtures thereof to produce a feed mixture stream. Preferably the feed mixture is heated to a temperature in the range of about 212 to 600° F. to vaporize volatile constituents in the feed mixture and to produce a feed dispersion stream. The feed dispersion is then reacted by partial oxidation with an oxygen-rich gas in an unpacked free-flow non-catalytic synthesis gas generator, at a temperature in the range of about 1500 to 3000° F. and at a pressure in the range of about 1 to 250 atmospheres to produce synthesis gas. Water separated from the sewage is purified and used for industrial applications or converted into by-product steam by indirect heat exchange with the product gas. In a second embodiment of the invention, garbage is disposed of by mixing bits of garbage with thickened sewage sludge and the aforesaid fluid thereby forming a feed mixture which is converted into synthesis gas by the partial oxidation reaction with an oxygen-rich gas in said flow type gas generator.

3,687,647
METHOD OF FABRICATION OF ABRASIVE DEVICE
Gustav M. Waller, Geneva, Ill., assignor to Burgess-Norton Mfg. Co., Geneva, Ill.
Filed Sept. 3, 1970, Ser. No. 69,364
Int. Cl. B24d *3/02*
U.S. Cl. 51—309 3 Claims

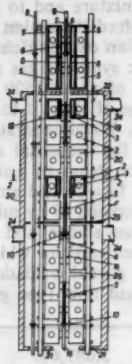


A method of making an abrasive drum by applying a brazing coating and carbide grit to the exterior of the drum and then heating the drum in a furnace while the drum is positioned vertically. The drum is supported in the furnace on its end without the use of supporting fixtures. A controlled atmosphere is provided in the furnace during heating.

3,687,648
HEATING AND BENDING OF GLASS SHEETS DURING VERTICAL CONVEYANCE
Richard John Oulton, Maghull, England, assignor to Pilkington Brothers Limited, Liverpool, England
Filed June 16, 1969, Ser. No. 833,498
Claims priority, application Great Britain, June 14, 1968, 28,507/68
Int. Cl. C03b *39/00*
U.S. Cl. 65—25 11 Claims

A flat glass sheet is heated and then in a vertically disposed process by resting the sheet only by its lower edge on a vertically moving support, and during the vertical

movement of the sheet, directing hot gas streams through interchangeable gas boxes having gas discharge outlets towards each face of the sheet, which gas streams main-



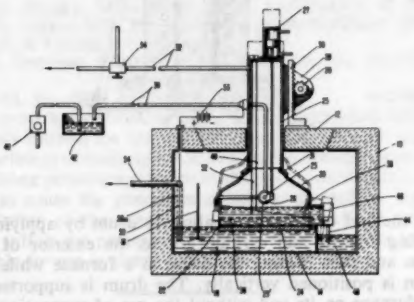
tain the sheet in upright disposition and heat the sheet prior to progressive bending after bending the sheet is passed between cooling boxes.

3,687,649

METHOD FOR THE SURFACE TREATMENT OF GLASS

Maurice Bourgeaux, Paris, France, assignor to Compagnie de Saint-Gobain, Neuilly-sur-Seine, France

Filed Oct. 23, 1969, Ser. No. 868,745
Claims priority, application France, Oct. 28, 1968, 171,579
Int. Cl. C03c 21/00
U.S. Cl. 65—30 **12 Claims**



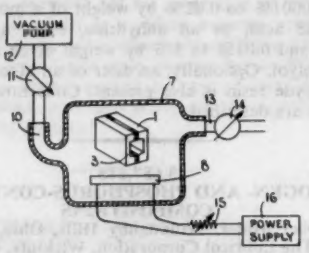
Method and apparatus for improving the properties of glass by the replacement of ions in the surfaces of the glass by larger ions. The lower surface of a piece of glass to be treated is put in contact with an electrically conducting molten salt bath, a layer of electrically conducting liquid is held under vacuum in contact with the upper surface of the glass, and a D.C. source is connected between the two baths. The originally upper surface of the glass is similarly treated in a later step wherein the glass is inverted. Alternatively, a continuously moving ribbon of glass may be treated in successive stages, the first of which treats one surface of the glass ribbon and the second of which treats the other surface thereof.

3,687,650

METHODS OF BONDING FERRITE COMPONENTS

Derek Frank Case, Sunbury-on-Thames, and Kenneth Stammers, Woking, England, assignors to International Computers Limited, London, England

Filed July 30, 1970, Ser. No. 59,600
Claims priority, application Great Britain, Aug. 16, 1969, 41,024/69; Apr. 18, 1970, 18,650/70
Int. Cl. C03b 23/20
U.S. Cl. 65—45 **5 Claims**



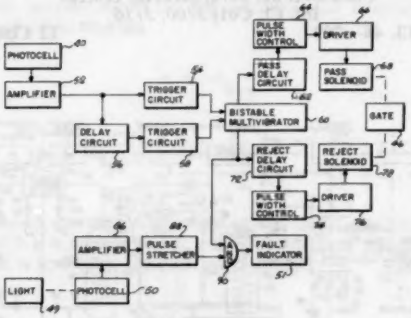
A method for bonding ferrite components in which a glass bonding material is caused to fill the gap between components. The components and glass are heated in a closed environment and the pressure is reduced. After outgassing of bubbles from the gap and ferrite has ceased, the pressure in the environment is increased, while the heat is at least maintained, to cause the glass to flow into and uniformly fill the gap. The glass, upon hardening, then bonds the ferrite components.

3,687,651

IGNITION FLASH CONTROL MEANS FOR BOTTLE TREATMENT

Addison B. Scholes, Muncie, Ind., assignor to Ball Brothers Company Incorporated, Muncie, Ind.

Filed Dec. 26, 1968, Ser. No. 787,041
Int. Cl. C03b
U.S. Cl. 65—161 **10 Claims**



A method and apparatus for treating newly formed glass containers with gaseous materials which improve chemical durability of the glass, by passing glass containers under a fixed nozzle from which the gas continuously issues, and monitoring means utilizing the ignition flash of flammable treatment gas to ensure that the otherwise unobservable treatment is, in fact, carried out.

3,687,652

Patent Not Issued For This Number

3,687,653

TRIFLUOROMETHYLBENZYL THIOLCARBAMATES AS HERBICIDES

Frederic G. Bollinger, Copley, and John J. D'Amico, Akron, Ohio, assignors to Monsanto Company, St. Louis, Mo.

No Drawing. Filed Apr. 13, 1970, Ser. No. 28,000
Int. Cl. A01n 9/22
U.S. Cl. 71—94 19 Claims

Substituted benzyl thiolcarbamates containing fluorine are described which are useful for controlling perennial and annual grasses.

3,687,654

METHOD OF MAKING ALLOY STEEL POWDER

Robert A. Huseby, Milwaukee, Wis., assignor to A. O. Smith-Inland Inc., Milwaukee, Wis.

No Drawing. Continuation-in-part of application Ser. No. 740,070, June 26, 1968. This application Mar. 10, 1971, Ser. No. 123,047
Int. Cl. B22f 1/00, 9/00
U.S. Cl. 75—.5 BA 5 Claims

An alloy steel powder to be used for powder metallurgy processes. The powder is produced by atomizing a molten stream of alloy steel containing up to 0.40% by weight of carbon and containing one or more of the following elements:

	Percent
Nickel	0.20 to 3.0
Molybdenum	0.2 to 1.0
Chromium	0.2 to 1.0

The silicon and manganese contents of the steel should be less than 0.10% and .50% by weight respectively.

Following the atomization, the resultant particles are heat treated at a temperature of 1500–2100° F. to soften the steel as well as reducing the carbon content. After annealing, the cake-like structure is broken up by hammer-milling to restore the as-atomized particle size.

3,687,655

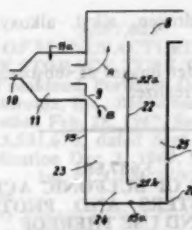
Patent Not Issued For This Number

3,687,656

METHOD OF TREATING METAL ORES AND ORE CONCENTRATES

Carl-August Maelzer, Frankfurt, and Lothar Reh, Bergen-Enkheim, Germany, assignors to Metallgesellschaft Aktiengesellschaft, Frankfurt am Main, Germany

Filed Apr. 20, 1970, Ser. No. 30,082
Claims priority, application Germany, Apr. 25, 1969, P 19 21 184.8
Int. Cl. C22b 15/06
U.S. Cl. 75—74 7 Claims



A method of and an apparatus for the recovery of metals from copper of nickel ores or ore concentrates in which the raw material is subjected to pyrometallurgical treatment in a cyclone-type furnace, the melt being reacted with a slag and introduced into a chamber subdivided by a vertical partition reaching close to the bottom of the chamber so as to define a first compartment communicating with the cyclone furnace and the further compartment communicating with the first compartment below the partition and having outlets for the melt. The process involves presence of a slag initially in both compartments, the removal of the slag layer in the second compartment, the refining of the exposed metals surface by top blowing with oxygen, and the tapping of the top-blown melt from the second compartment.

3,687,657

AIR SINTERING OF ALUMINUM POWDER COMPACTS

Samuel Storchheim, 104—40 Queens Blvd., Forest Hills, N.Y. 11375

No Drawing. Continuation-in-part of application Ser. No. 53,187, July 8, 1970. This application June 24, 1971, Ser. No. 156,539
Int. Cl. B22f 1/00
U.S. Cl. 75—212 4 Claims

Aluminum metal powder compacts are so made that they can be sintered in ambient atmospheric air with resulting outstanding physical properties. The controls which make this possible include the use of a controlled amount of magnesium or zinc, or both, in the powder mixture, compaction to 92 to 97% of theoretical density, the absence of any component in the powder mixture which would preclude direct metal-to-metal interface contact between the metal particles or volatilized during heating up to sintering temperature, the use of a normally liquid oil as a die wall lubricant, control of the heating-up rate to sintering temperature, and use of a relatively short sintering period.

3,687,658

ELECTROSTATIC RECORDING PROCESSES AND MATERIALS FOR CHARGELESS ELECTROPHOTOGRAPHY

Karel Verhille, Mortsel-Antwerpen, André Jan Conix, Antwerpen, and Robert Joseph Noe, Mortsel-Antwerpen, Belgium, assignors to Agfa-Gevaert N.V., Mortsel, Belgium

No Drawing. Original application June 27, 1966, Ser. No. 560,900. Divided and this application Oct. 27, 1969, Ser. No. 869,867
Claims priority, application Great Britain, June 25, 1965, 27,129/65, 27,130/65; Apr. 14, 1966, 16,459/66
Int. Cl. G03g 13/22
U.S. Cl. 96—1 R 11 Claims

A method of recording without external electrostatic charging wherein an uncharged recording material having recording layer containing particles of an n-type photoconductor distributed in a hydrophilic polymeric binding agent constituting about 50–97% by weight of the recording layer is imagewise exposed to radiation and is thereafter electrophoretically developed with a dispersion of electrostatically attractable substances in an electrically insulating liquid medium.

3,687,659

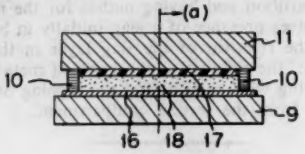
ELECTROPHOTOGRAPHIC PLATE AND THE METHOD FOR PRODUCING THE SAME

Takao Komiya and Umi Tosaka, Tokyo, Takashi Ihara, Kawasaki-shi, Takehiko Matsuo, Tokyo, and Katsunobu Ohara, Kawasaki-shi, Japan, assignors to Canon Kabushiki Kaisha, Tokyo, Japan

Filed Sept. 12, 1967, Ser. No. 667,257
Claims priority, application Japan, Sept. 22, 1966, 41/62,655; Nov. 21, 1966, 41/76,477
Int. Cl. G03g 5/08, 7/00
U.S. Cl. 96—1.5 11 Claims

A photosensitive plate having a photoconductive layer composed of a dispersed system of photoconductive mate-

rial and resin sandwiched between a conductive layer and a translucent insulative layer in the absence of a solvent. The photoconductive layer is a solid layer produced by



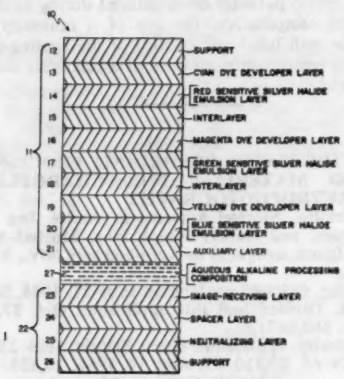
polymerization of a liquid resin mixture produced by dispersing a photoconductive substance into a liquid polymerizable resin not containing a solvent.

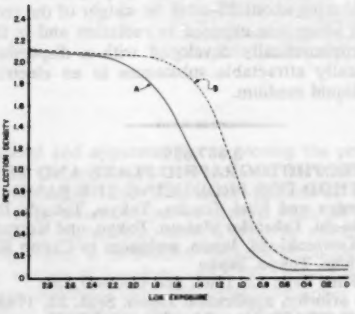
3,687,660

DIFFUSION TRANSFER PHOTOGRAPHIC ELEMENTS COMPRISING 5-HYDROXY-4-AZABENZIMIDAZOLE AND A SECOND AZABENZIMIDAZOLE, AND PROCESSES FOR THEIR USE

James D. Gondolfe, Cambridge, Ruth Scanlan, Quincy, and Jeanne A. Ward, Lexington, Mass., assignors to Polaroid Corporation, Cambridge, Mass.

Filed Oct. 15, 1970, Ser. No. 81,025
Int. Cl. G03c *1/34, 5/54, 7/00*
U.S. Cl. 96—3 **36 Claims**





A novel combination of azebenzimidazoles is used for the prevention of fog formation in diffusion transfer photographic processes, which combination results in a dynamic range extension of the photographic system.

3,687,661

COLOR ELECTROPHOTOGRAPHIC PROCESS

Masamichi Sato and Seiji Matsumoto, Asaka, Japan, assignors to Xerox Corporation, Stamford, Conn.

Filed Nov. 3, 1970, Ser. No. 86,501
Claims priority, application Japan, Dec. 1, 1969, 44/95,356
Int. Cl. G03g *13/22*
U.S. Cl. 96—1.2 **7 Claims**

A color reproducing process is herein disclosed in which a series of color toner images are sequentially developed in superposition upon the surface of a photoconductive plate. Between each development step, the plate is imaged by charging the plate to a potential of a first polarity in both the previously developed and non-developed regions. The charge accepted in the previously developed regions is then partially neutralized by applying thereto a second charge having a polarity opposite to that of the initial charge whereby the original charge in the previously developed regions is reduced to a level substantially equal to the potential in the non-developed region. The now uniformly charged plate is exposed to a light image containing additional input scene information relating to the next image to be developed.

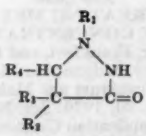
3,687,662

SILVER DIFFUSION TRANSFER PROCESS HAVING HYDROXYLAMINE, CYCLIC IMIDE AND A PYRAZOLIDINONE

Jozef Frans Willems, Wilrijk, Robrecht Julius Thiers, Brasschaat, and Roger Alois Spriet, Edegem, Belgium, assignors to Gevaert-Agfa N.V., Mortsel, Belgium

No Drawing. Filed Oct. 12, 1970, Ser. No. 80,186
Claims priority, application Great Britain, Oct. 27, 1969, 52,572/69
Int. Cl. G03c *5/54*
U.S. Cl. 96—29 **6 Claims**

A silver complex diffusion transfer process is described utilizing a hydroxylamine developing agent, a cyclic imide silver complexing agent, and a pyrazolidinone having the formula:



wherein:

R_1 stands for aryl including substituted aryl,

each of R_2 and R_3 (the same or different) stands for hydrogen, an alkyl group, an aralkyl group, or an aryl group, and

R_4 stands for hydrogen, alkyl, alkoxy, aralkoxy or aryloxy.

Better quality transfer images at substantially lower illumination levels are realized.

3,687,663

DIAZO-OXIDES OF SULFONIC ACID AMIDES AND/OR ESTERS AND PHOTOGRAPHIC ELEMENT AND USE THEREOF

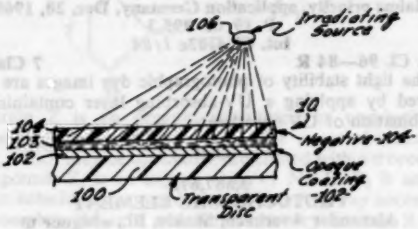
Albert Bloom, Boston, Mass., assignor to Industrial Dyestuff Company, Providence, R.I.

No Drawing. Filed May 19, 1970, Ser. No. 38,912
Int. Cl. C07c *113/00;* **G03c** *1/54;* **G03f** *7/08*
U.S. Cl. 96—33 **9 Claims**

Diazo-oxides of sulfonic acid amides and/or esters containing a plurality of aromatic ether groups, e.g. the

bis-diazo-oxide of naphthalene sulfonic acid amide of the p-aminophenyl diether of bisphenol A, and their use in printing plates, electronics, and other fields which use light-sensitive materials. Upon exposure through a transparency the diazo-oxides decompose and the decomposition products can be removed by alkali. Where the diazo-oxide has not been exposed and decomposed the plate will accept printing ink so as to be able to print large numbers of positive reproductions of the original transparency, or it may resist the action of etchants.

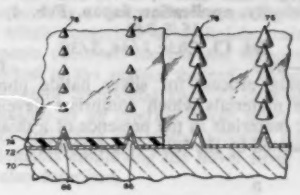
3,687,664
DUPLICATING PROCESS FOR VIDEO DISC RECORDS
Kent D. Broadbent, San Pedro, Calif., assignor to Gauss Electrophysics, Inc., Santa Monica, Calif.
Filed July 24, 1968, Ser. No. 747,337
Int. Cl. G03c *1/68, 5/16*
U.S. Cl. 96—35.1 **5 Claims**



A duplicating process for forming disc records bearing optical recordings representative of video signals is provided. A transparent disc, formed for example of plastic or glass, has a surface coated with an appropriate opaque material, such as copper. The surface is then exposed to a monomer vapor, for example, which is selectively polymerized by electromagnetic radiation, such as X-rays or ultraviolet rays, etc., through a negative of the desired video recordings. This results in the polymerization on the coated surface of the disc of a hydrocarbon layer in the pattern of the video recordings of the negative. The portions of the coated surface which are not covered by the hydrocarbon layer are then etched off by a suitable etchant, such as chlorine gas, to provide a transparent pattern of holes in the opaque coating which are representative of the video recordings.

3,687,665
METHOD OF MANUFACTURING CATHODE RAY STORAGE TUBE TARGET
Roger A. Frankland, Portland, Oreg., assignor to Tektronix, Inc., Beaverton, Oreg.
Original application Feb. 28, 1967, Ser. No. 619,904, now Patent No. 3,531,675, dated Sept. 29, 1970. Divided and this application Dec. 1, 1969, Ser. No. 879,954
Int. Cl. G03c *5/00*
U.S. Cl. 96—36 **3 Claims**

A cathode ray storage tube is provided with a storage target having a multiplicity of collector electrodes extending through the storage target's dielectric layer. These collector electrodes act to collect secondary electrons and control the electric field configuration near the surface of the storage target for the prevention of trace shadowing. The target is manufactured by a photo-etching process wherein an insulating substrate body is coated with metal which is etched to a dot pattern. The insulating substrate is then etched resulting in conical shaped



protrusions which are provided with a conductive layer and surrounded with dielectric material.

3,687,666
CELLOPHANE LAMINATE UTILIZED AS DYE IMBIBITION RECEIVING LAYER
Thomas F. Protzman, Worthington, Ohio, assignor to A. E. Staley Manufacturing Company, Decatur, Ill.
No Drawing. Filed Mar. 23, 1971, Ser. No. 127,352
Int. Cl. G03c *1/72, 7/00;* **G03f** *3/04*
U.S. Cl. 96—48 R **6 Claims**

Dye imbibition color reproductions employing a dimensionally stable cellophane laminate.

3,687,667
PROCESS FOR FORMING POLYMER IMAGES
Yoshihide Hayakawa and Masato Satomura, Asaka-shi, Japan, assignors to Fuji Photo Film Co., Ltd., Kanagawa, Japan
No Drawing. Filed July 16, 1969, Ser. No. 842,379
Claims priority, application Japan, July 16, 1968, 43/50,097
Int. Cl. G03c *1/70, 5/26*
U.S. Cl. 96—48 R **30 Claims**

A process for forming a polymer image which comprises applying to a photographic silver halide emulsion layer bearing a photographic latent image at least one member selected from the group consisting of metaphenylenediamine, 1,8-diaminonaphthalene, 2,7-diaminonaphthalene, and derivatives of the diaminonaphthalenes in the presence of at least one member selected from the group consisting of an addition-polymerizable vinylidene monomer and a vinyl monomer and conducting the polymerization of said monomer selectively at the latent image-bearing portion of said emulsion layer.

3,687,668
PALLADIUM IMAGES BY HYDROGEN REDUCTION
Michael F. Sullivan, Rochester, N.Y., assignor to Eastman Kodak Company, Rochester, N.Y.
No Drawing. Filed Oct. 7, 1970, Ser. No. 78,946
Int. Cl. G03c *5/24*
U.S. Cl. 96—48 **9 Claims**

Visible palladium images may be formed by treating imagewise exposed photosensitive elements with palladium (II) ion, and subsequently forming palladium metal on such imagewise formed palladium nuclei by reduction with hydrogen. Further, a heavy metal may be imagewise deposited on these palladium images by the use of stable heavy metal physical developers such as nickel, cobalt, iron, palladium, platinum, chromium, copper, etc. Suitable photosensitive elements comprise titanium dioxide, zinc oxide, lead chromate, lead oxide, lead molybdate, or copper oxide. Titanium dioxide is preferred.

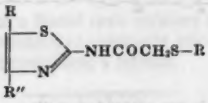
3,687,669

PROCESS FOR LOW CONTRAST DEVELOPMENT

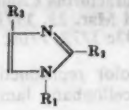
Yoo Iijima, Isao Shimamura, Tokiharu Kondo, and Haruhiko, Iwano, Kanagawa, Japan, assignors to Fuji Photo Film Co., Ltd., Kanagawa, Japan

No Drawing. Filed Feb. 4, 1971, Ser. No. 112,825
Claims priority, application Japan, Feb. 4, 1970, 45/9,840
Int. Cl. C03c *1/34, 5/30*
U.S. Cl. 96—66.3 11 Claims

A developing process for silver halide photographic light-sensitive materials which comprises developing the photographic materials in the presence of a thiazole compound represented by the following formula:



wherein R represents an alkyl group, an aralkyl group or an aryl group, and R′ and R″ each represents a hydrogen atom or an alkyl group, wherein said R′ and R″ may form a condensed ring and wherein said condensed ring may be substituted by an alkyl group; and an imidazole compound represented by the following formula:



wherein R_1, R_2, R_3, and R_4 each represents a hydrogen atom, an alkyl group, a hydroxyl group, or an alkenyl group.

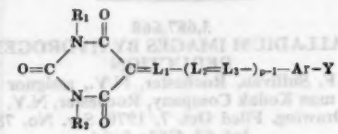
3,687,670

PHOTOGRAPHIC ELEMENT CONTAINING COLORED COLLOID LAYERS

Guy Alfred Rillaers, Kontich, Henri Depoorter, Mortsel, and Felix Jan Moelants, Wilrijk, Belgium, assignors to Gevaert-Agfa N.V., Mortsel, Belgium

Filed May 13, 1969, Ser. No. 824,079
Claims priority, application Great Britain, May 21, 1968, 24,069/68
Int. Cl. G03c *1/84*
U.S. Cl. 96—84 8 Claims

Light-screening dyes are provided for use as filter dyes and anti-halation dyes in photographic non-light sensitive colloid layers and as screening dyes in photographic light-sensitive emulsion layers which are discharged quickly, completely, and irreversibly in photographic processing liquids including lith-type developers. The dyes have the formula:



wherein

R_1 stands for an alkyl group, an allyl group, a cycloalkyl group, an aralkyl group or an aryl group,

R_2 stands for hydrogen, an alkyl group, an allyl group, a cycloalkyl group, an aralkyl group or an aryl group,

each of L_1, L_2, and L_3 (the same or different) represents a methine group,

Ar represents an arylene nucleus or an arylene nucleus condensed to form a fused ring system,

p stands for 1 or 2, and

Y stands for a hydroxyl group, an alkoxy group, an alkylthio group or an amino group,

the dyestuff molecule containing at least one carboxy alkyl or sulfoalkyl group in acid or salt form.

3,687,671

PHOTOGRAPHIC LAYERS CONTAINING COMPOUNDS WHICH ABSORB ULTRAVIOLET LIGHT

Manfred Kreuder and Wolfgang Metzner, Krefeld, Johannes Sobel, Leverkusen, Wolfgang Himmelmann, Opladen, and Fritz Nittel and Willibald Pelz, Cologne, Germany, assignors to Agfa-Gevaert Aktiengesellschaft, Leverkusen, Germany

No Drawing. Filed Dec. 15, 1970, Ser. No. 98,471
Claims priority, application Germany, Dec. 20, 1969, P 19 63 995.3
Int. Cl. G03c *1/84*
U.S. Cl. 96—84 R 7 Claims

The light stability of photographic dye images are improved by applying a UV-absorbing layer containing a combination of UV-absorbents.

3,687,672

PHOTOCHROMIC ELEMENT

Alexander Averbach, Skokie, Ill., assignor to A. B. Dick Company, Niles, Ill.

No Drawing. Filed Nov. 1, 1968, Ser. No. 772,799
Int. Cl. G03c *1/52*
U.S. Cl. 96—90 PC 4 Claims

A photochromic element in the form of a base sheet having a coating containing an inorganic photochromic compound in the form of a tungstic or molybdic acid and their complexes with phosphoric acid and a phenylglycolic acid and derivative which enhances the depth of color developed in response to exposure to ultra-violet light.

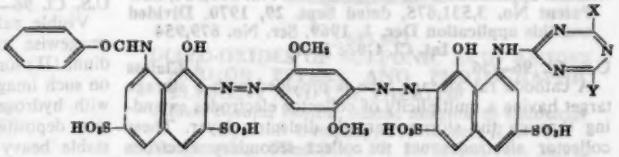
3,687,673

COLOR PHOTOGRAPHIC LIGHT-SENSITIVE MATERIALS CONTAINING A CYAN DYE FOR SILVER DYE BLEACHING METHOD

Makoto Yoshida and Shinichi Imai, Kanagawa, Japan, assignors to Fuji Photo Film Co., Ltd., Kanagawa, Japan

Filed Sept. 22, 1970, Ser. No. 74,342
Claims priority, application Japan, Sept. 22, 1969, 44/75,466
Int. Cl. G03c *1/10*
U.S. Cl. 96—99 7 Claims

A color photographic light-sensitive material for the silver dye bleaching method comprising a support having thereon a photographic emulsion layer containing a member selected from the group consisting of a cyan dye having the following general formula



wherein X is selected from the group consisting of a halogen atom, a hydroxyl group, an amino group and an anilino group, and wherein Y is a residual group of a

compound capable of reacting with the most readily reactive chlorine atom of cyanuric chloride, and the sodium and ammonium salts thereof, is disclosed.

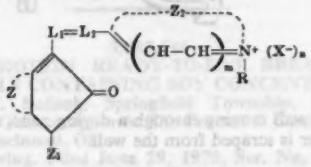
3,687,674

DIRECT POSITIVE FOGGED SILVER HALIDE EMULSION SENSITIZED WITH A CYCLOHEPTATRIENE CYANINE DYE

Akiro Sato, Minoru Sonoda, Keisuke Shiba, Mansanao Hinata, and Tetsuo Nozoe, Minami Ashigara-machi, Ashigara-Kamigun, Kanagawa, Japan, assignors to Fuji Photo Film Co., Ltd., Kanagawa, Japan

No Drawing. Filed Nov. 16, 1970, Ser. No. 90,070
Claims priority, application Japan, Nov. 14, 1969, 44/91,238
Int. Cl. G03c 1/36
U.S. Cl. 96—101 16 Claims

A direct positive silver halide emulsion comprising at least one dye of the formula:



wherein Z is an organic substituted or unsubstituted atomic group necessary to complete a cycloheptatriene ring, which may be optionally substituted with a troponoid compound; Z_1 is an oxygen atom or N—H; Z_2 is an organic substituted or unsubstituted atomic group necessary to complete a 5 or 6 membered heterocyclic ring; R is a member of the alkyl series selected from the group consisting of lower alkyl, hydroxy (lower) alkyl, lower alkoxy, sulfo (lower) alkoxy, vinyl methyl aralkyl and sulfo aralkyl; L_1 and L_2 are a group from the methine series, said L_2 capable of forming a methylene chain together with said R; X is an anion, and *m* and *n* each is 0 or 1, providing that *n* is 0 when the dye forms an intramolecular salt, and a photographic light-sensitive element formed from said emulsion. The present invention also extends to the dyes themselves and a process for preparing the same.

3,687,675

PHOTOGRAPHIC SILVER HALIDE EMULSIONS CONTAINING A CYANINE DYE CONTAINING AT LEAST ONE 1-CYANOALKYL-2-ARYLINDOLE NUCLEUS

Wilbur S. Gaugh, Rochester, N.Y., assignor to Eastman Kodak Company, Rochester, N.Y.

No Drawing. Filed May 3, 1971, Ser. No. 139,859
Int. Cl. G03c 1/28, 1/36
U.S. Cl. 96—101 17 Claims

Novel cyanine dyes comprising two nitrogen-containing heterocyclic nuclei joined by a methine linkage, one of said nuclei being a 1-cyanoalkyl-2-arylindole nucleus joined at the 3-carbon atom thereof to said methine linkage, are useful desensitizers for negative silver halide emulsions and are useful electron acceptors and spectral sensitizers for fogged direct positive silver halide emulsions.

3,687,676

DESENSITIZERS IN UNFOGGED SILVER HALIDE SYSTEMS

John Spence, Honeoye Falls, Paul Brewster Gilman, Jr., Rochester, and Cynthia Geer Ulbing, Fairport, N.Y., assignors to Eastman Kodak Company, Rochester, N.Y.

No Drawing. Filed July 20, 1970, Ser. No. 56,701
Int. Cl. G03c 1/28
U.S. Cl. 96—108 16 Claims

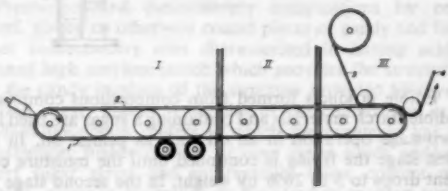
This invention relates to improved silver halide systems which contain unfogged silver halide grains having metal dopants occluded therein and at least one compound having a cathodic halfwave potential more positive than —1.0 which is a desensitizer for surface-sensitized silver halide emulsions. In one aspect, this invention relates to a process for forming negative photographic images comprising (1) imagewise-exposing a silver halide emulsion which comprises silver halide grains containing metal dopants occluded therein and wherein said grains have adsorbed to the surface thereof a desensitizer or an electron-acceptor compound and (2) developing said exposed emulsion in an internal-image silver halide developer. Black-and-white and color diffusion transfer photographic elements employing the novel silver halide emulsions are also described.

3,687,677

PHOTOSENSITIVE ELEMENTS HAVING HIGH SURFACE CONCENTRATION OF SILVER HALIDE AND STABILIZED AGAINST CONTAMINATION FOG

Roger G. L. Audran, Claude G. Dostes, and Claude M. Marechal, Vincennes, France (all % Eastman Kodak Company, Rochester, N.Y. 14650)

Continuation-in-part of application Ser. No. 641,835, May 29, 1967. This application Apr. 27, 1971, Ser. No. 137,917
Claims priority, application France, July 10, 1967, 1492153
Int. Cl. G03c 1/34
U.S. Cl. 96—109 5 Claims



A photographic element comprising a silver halide emulsion layer in which most of the silver halide has been concentrated at one surface of the emulsion layer wherein the silver halide emulsion contains, after sensitization and before the silver halide grains have been concentrated at one surface, a member selected from the group consisting of glyoxal and mucochloric acid in a concentration to effectively control contamination fog, said concentration being between about 1 to about 20 grams per gram atom of silver with the mean grain size of said silver halide grains being about 0.5μ to about 2.5μ and to provide hardening of the very thin layer of gelatin enveloping the silver halide grains. This fog stabilizing effect appears to be unique to these agents and is not found in other known photographic silver halide emulsion hardeners.

3,687,678

SPECTRALLY SENSITIZED SILVER HALIDE PHOTOGRAPHIC MATERIAL SENSITIZED WITH XANTHYLIUM DYES AND ACID MERCAPTO COMPOUNDS

Oskar Riester, Leverkusen, Germany, assignor to Agfa-Gevaert Aktiengesellschaft, Leverkusen, Germany

No Drawing. Filed Aug. 26, 1970, Ser. No. 67,256
Claims priority, application Germany, Sept. 12, 1969, P 19 46 263.6
Int. Cl. G03c 1/08
U.S. Cl. 96—122 6 Claims

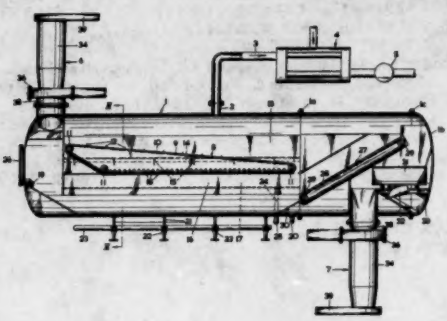
The sensitization of light-sensitive silver halide emulsions which is brought about by xanthylium, thiaxanthylium or selenaxanthylium dyes is largely increased by using these xanthylium, thiaxanthylium or selenaxanthy-

lium dyes in combination with excessive amounts of an acid isocyclic or heterocyclic aromatic mercapto compound.

3,687,679
PROCESS FOR PREPARING FRIED STARCH PRODUCTS

Pieter Herman Sijbring, Rhenen, Netherlands, assignor to Instituut voor Bewaring en Verwerking van Landbouxprodukten, Wageningen, Netherlands

Continuation-in-part of application Ser. No. 677,634, Oct. 24, 1967. This application July 7, 1969, Ser. No. 850,296
Claims priority, application Great Britain, Oct. 29, 1968, 51,301/68
Int. Cl. A23b *7/03;* **A23l** *1/12*
U.S. Cl. 99—1 **6 Claims**



Edible products formed from compositions comprising edible starch materials and containing a sugar are fried in a two-stage operation in an oil such as peanut oil. In the first stage the frying is continued until the moisture content drops to 5 to 20% by weight. In the second stage the frying is done under reduced pressure at a temperature of not more than 100° C. and is continued until the moisture content is not more than 2.5% by weight.

A suitable oven for carrying out the second stage consists of a closed housing, supply and discharge sluices, suction means for drawing off water vapor and to keep the pressure below atmospheric, conveyor means for moving the edible product toward the discharge outlet and means for removing the fried edible product from the oil before such product reaches the discharge sluice.

3,687,680
ANIMAL FEED CONTAINING MORTMORILLONITE CLAY

John Krchnavi and William D. Leech, Riverside, Calif., assignors to Bio-Med Research Corporation, Loma Linda, Calif.

No Drawing. Filed Aug. 4, 1970, Ser. No. 60,919
Int. Cl. A23k *1/00*
U.S. Cl. 99—4 **13 Claims**

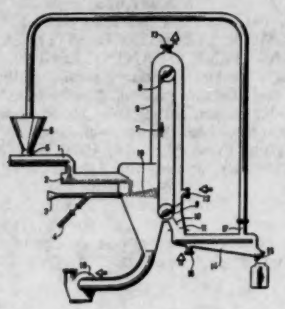
A montmorillonite clay is added to a nutritionally adequate animal diet. The montmorillonite clay utilized is a low expansion clay which is low in sodium, high in calcium, low in silica and low in aluminum oxide.

3,687,681
METHOD AND A DEVICE FOR PREPARING A QUICKLY SOLUBLE POWDER

Geert de Boer, Lippenhuizen, Netherlands, assignor to Stork Amsterdam N.V., Amstelveen, Netherlands

Filed Sept. 3, 1970, Ser. No. 69,291
Int. Cl. A23c *9/00*
U.S. Cl. 99—56 **7 Claims**

For obtaining a quickly soluble powder a curtain of floating powder is subjected to at least one jet of a moistening gas impinging upon the curtain under an angle of 30°–150°. The powder particles are thereby cast against



a moving wall moving through a drying zone, after which the powder is scraped from the wall.

3,687,682
PROCESS FOR THE TREATMENT OF LIQUID WHEY

John R. Scheder, Horicon, Wis., assignor to Purity Electrochemicals Company, Mayville, Wis.

Filed Aug. 5, 1970, Ser. No. 61,168
Int. Cl. A23c *21/00;* **B01d** *13/02*
U.S. Cl. 99—57 **3 Claims**

High degrees of demineralization of liquid whey without denaturation of whey protein are attained by first deionizing liquid whey of less than 20 percent solids content to effect a reduction of the ash content in excess of 65 percent followed by concentration of the demineralized whey to a solids content of more than 50 percent and removal of crystallized lactose, the deionization being carried out in a cell containing cation membranes and neutral membranes.

3,687,683
METHOD FOR PRODUCING ENHANCED SOLUBLE COFFEE

Joel R. Kaplan, Ossining, and Arno Huste, Rego Park, N.Y., assignors to General Foods Corporation, White Plains, N.Y.

No Drawing. Filed June 15, 1970, Ser. No. 46,447
Int. Cl. A23f *1/08*
U.S. Cl. 99—71 **9 Claims**

A method for producing an enhanced soluble coffee product has been developed wherein a minor portion of enhanced, soluble food powder, such as coffee is agglomerated with a major portion of ground, unenhanced, soluble food powder such as spray-dried coffee.

3,687,684
METHOD OF MAKING CARBONATED BEVERAGES

Ralph L. Wentworth, Watertown, and Glenn K. Armstrong, Lexington, Mass., assignors to Dynatech Corporation, Cambridge, Mass.

Filed Aug. 21, 1968, Ser. No. 754,222
Int. Cl. A23l *1/00*
U.S. Cl. 99—79 **4 Claims**

A carbonated beverage is formed by diluting a concentrated carbonated solution containing 15–75% by weight sugar, 85–25% by weight water, and more than 6 volumes of carbon dioxide. A flavoring agent may be

included within the concentrate. The concentrate is diluted by pouring it through air into water without jet assistance or by pouring water through air into the concentrate.

3,687,685
TORTILLA AND PROCESS USING PHOSPHORUS OXYCHLORIDE
Manuel Jesus Rubio, Bridgeport, Conn., assignor to Roberto Gonzalez Barrera, Monterrey, Nuevo Leon, Mexico
No Drawing. Filed July 24, 1970, Ser. No. 58,140
Int. Cl. A23l *1/10*
U.S. Cl. 99—80 R **3 Claims**

To retard the staling of tortillas, which are an unleavened food product made from nixtamalized corn or corn flour by incorporating an additive in making the tortilla dough. The additive is phosphorus oxychloride in alkaline condition.

3,687,686
HIGH PROTEIN READY-TO-EAT BREAKFAST CEREALS CONTAINING SOY CONCENTRATE
William T. Bedenk, Springfield Township, Hamilton County, Ohio, assignor to The Procter & Gamble Company, Cincinnati, Ohio
No Drawing. Filed June 29, 1970, Ser. No. 50,925
Int. Cl. A23l *1/10*
U.S. Cl. 99—83 **18 Claims**

Novel high protein content ready-to-eat cereal products are produced from soya. Soy concentrate having a protein content of 70% up to 90% on a dry basis is partially hydrolyzed in the presence of a proteolytic enzyme and preferably thereafter combined with a cereal grain such as corn, rice, oats, or wheat. The resultant mixture is then processed to produce a cold cereal product having a high nutritive value, i.e. a protein content greater than 20% and that remains crispy and tender after exposure to milk.

3,687,687
PRODUCTION OF READY-TO-EAT BREAKFAST CEREALS CONTAINING SOY FLOUR
Alexander L. Liepa, Cincinnati, Ohio, assignor to The Procter & Gamble Company, Cincinnati, Ohio
No Drawing. Filed June 29, 1970, Ser. No. 50,980
Int. Cl. A23l *1/10*
U.S. Cl. 99—83 **14 Claims**

A novel high protein ready-to-eat cereal is produced containing soy flour. Soy flour having a protein content of about 40% up to 70% on a dry basis is made palatable by partially hydrolyzing it in the presence of a proteolytic enzyme and thereafter processing it to form a cold cereal product. Alternatively, a cereal grain such as corn, oats, wheat, or rice can be mixed with the partially hydrolyzed soy flour in such proportions that a cold cereal having a protein content greater than 20% is produced.

3,687,688
METHOD OF MAKING POTATO PRODUCTS
Rulon Floyd Stapley, 1255 Pine St., and Clarence T. Hollibaugh, 222 N. 13th St., both of Othello, Wash. 99344
Continuation of application Ser. No. 607,352, Dec. 14, 1966. This application Oct. 27, 1969, Ser. No. 869,964
Int. Cl. A23l *1/12*
U.S. Cl. 99—100 P **9 Claims**

Potatoes inserted endwise in cups are pierced lengthwise by a cluster of coring tubes which form cylindrical potato sticks. The resulting cored potato bodies are conveyed past rotating knife gangs which slice them into perforated slices. The potato sticks, potato slices and whole potatoes can be coated either before or after cooking and before freezing with batter containing sodium alginate which constitutes an agglutinant and a dehydration deterrent.

3,687,689
METHOD OF PREPARING FRESH PORK SAUSAGE HAVING IMPROVED COLOR
Everett V. Podebradsky, Madison, Wis., assignor to Oscar Mayer & Company, Inc., Chicago, Ill.
No Drawing. Filed Mar. 30, 1970, Ser. No. 23,977
Int. Cl. A22c *11/00*
U.S. Cl. 99—109 **2 Claims**

Pork sausage is made from pre-rigor meat. Meat from freshly killed hogs is ground coarsely and mixed with salt and spices while still body-warm. The meat is cooled sufficiently to result in good particle definition when reground through a smaller plate. After regrinding, the pork sausage mixture is stuffed into air permeable casings, linked and the links are packaged.

3,687,690
CONFECTION AND METHOD OF MAKING IT
Carl O. Moore, Rochester, Ill., assignor to A. E. Staley Manufacturing Company, Decatur, Ill.
No Drawing. Filed Mar. 31, 1970, Ser. No. 24,366
Int. Cl. A23g *3/00*
U.S. Cl. 99—134 G **12 Claims**

Pressure-cooked confectionery compositions for enrobed, glazed or otherwise coated pieces of candy and for other confectionery uses characterized in having acid-thinned high amylose starch which provides the structure for the candy in place of the structure provided by crystallized sugar. Specific examples of the composition are fondant-like cream centers in which the sweetener has a substantially higher content of corn syrup solids and/or invert sugar syrup and substantially lower content of sucrose, either in crystalline or dissolved form, than conventional fondant centers and yet has the cream center structure, body and texture. The composition is thin at high temperature but thick and creamy at low temperature, permitting great simplification in the candy-making process.

3,687,691
METHOD OF INCORPORATING VOLATILE AROMATICS INTO HARD CANDY
Jerome Adelstein, Westchester, N.Y., and Robert R. Frey, Montgomery, Pa., assignors to Richardson-Merrell, Inc., New York, N.Y.
No Drawing. Filed Aug. 10, 1970, Ser. No. 62,726
Int. Cl. A23g *3/00*
U.S. Cl. 99—134 R **3 Claims**

Incorporation of aromatic oils into hard candy at temperatures of 220°–260° F. by granulating gels of aromatic oils and microfine silica with polyethylene glycols having a molecular weight of 3,000–10,000 and mixing the granules with the hot plastic hard candy.

3,687,692
FLAVORING COMPOSITIONS AND PROCESSES
Alan O. Pittet, Atlantic Highlands, and Eugene W. Seitz, Middletown, N.J., assignors to International Flavors & Fragrances Inc., New York, N.Y.
No Drawing. Filed Sept. 3, 1970, Ser. No. 69,505
Int. Cl. A23l *1/26*
U.S. Cl. 99—140 R **12 Claims**

Proline-cyclic-α-diketone reaction products, their use in processing and compositions for altering the flavor and in-

creasing the long-term flavor acceptability and persistence of various foodstuffs, flavoring compositions, tobacco, imitation tobacco, replacements thereof, and imparting desirable flavor and aroma notes to these products as well as packaging materials for same; and, in addition, the use of the said reaction products as odorants and for altering the aroma of perfume compositions and for imparting certain aroma "notes" to perfume compositions.

3,687,693

PROCESS FOR EXTRACTING A SWEETENING AGENT FROM *DIOSCOREOPHYLLUM CUMMINSII* BERRIES

Okon A. Essiet, 102 NE. 95th St., Portland, Oreg. 97220

Filed May 25, 1970, Ser. No. 40,185
Int. Cl. A23l *1/26*
U.S. Cl. 99—141 7 Claims

An aqueous solution of a water-soluble, carbohydrate sweetening material is obtained from *Dioscoreophyllum cumminsii* berries by first isolating in solution the sweetening material in the form of a carbohydrate-protein complex, then irradiating the solution with ultraviolet radiation to break the carbohydrate-protein bond and then precipitating and removing the undesired protein.

3,687,694

FOUNTAIN SOLUTION AND PLATE ETCH CONCENTRATE OF INCREASED OPERATING LATITUDE

Charles H. Van Dusen, Jr., Willoughby, Ohio, assignor to Addressograph - Multigraph Corporation, Cleveland, Ohio

No Drawing. Continuation of abandoned application Ser. No. 855,369, Sept. 4, 1969. This application Jan. 18, 1971, Ser. No. 107,522
Int. Cl. C09k *3/18*
U.S. Cl. 106—2 4 Claims

A fountain solution concentrate of increased operating latitude is provided which is adapted upon varying degrees of water dilution for use with a plurality of different types of planographic masters, such as electrostatic, direct image, and photographic plates, both projection speed and conventional.

The concentrate comprises an aqueous solution of a humectant, a buffered phosphate compound, and preferably a low molecular weight aldehyde. Relatively high weight ratios of the phosphate ion to the humectant are possible without sacrificing a tolerable acidic pH.

3,687,695

CRYSTALLINE FORM V AMMONIUM POLYPHOSPHATE AND PROCESS FOR PRODUCING SAME

David R. Dyroff, Creve Coeur, Mo., assignor to Monsanto Company, St. Louis, Mo.

No Drawing. Original application May 28, 1968, Ser. No. 732,506, now Patent No. 3,592,588. Divided and this application Mar. 26, 1970, Ser. No. 30,613
Int. Cl. C09g *1/02*
U.S. Cl. 106—3 6 Claims

A new crystalline form of ammonium polyphosphate and processes for producing same are disclosed. The new ammonium polyphosphate is a useful ingredient in metal polishes.

3,687,696

Patent Not Issued For This Number

3,687,697

GLASSES FOR TEMPERATURE-STABLE ULTRASONIC DELAY LINES OF LOW DAMPING CHARACTERISTICS

Marga Faulstich, Mainz, and Norbert Neuroth, Mainz-Mombach, Germany, assignors to JENAer Glaswerk Schott & Gen., Mainz, Germany

Filed June 22, 1970, Ser. No. 48,246
Claims priority, application Germany, June 25, 1969, P 19 32 135.8
Int. Cl. C03c *3/04, 3/10;* H03h *7/30*
U.S. Cl. 106—53 9 Claims

Glass compositions for use in delay line assemblies having low temperature coefficient of propagation time for ultrasonic waves, low mechanical damping, a transformation temperature of about 540–600° C., and high acoustical impedance. Preferred compositions in percent by weight are as follows:

SiO_2	48.5–49.7
Li_2O	0–0.2
Na_2O	0–0.6
K_2O	0.7–1.0
BaO	10.5–11.5
ZnO	3.1–5.8
PbO	31–34
Sb_2O_3	0.3–0.5

the total alkali metal oxide amounting to 0.7–1.8%, with the proviso that up to 2 of the wt. percent of BaO may be replaced by CdO, SrO, CaO, WO_3, Al_2O_3 or a mixture of two or more thereof, for stabilization against devitrification.

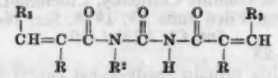
3,687,698

NONWANDERING HARDENING COMPOUNDS AND THEIR USE

Hyman L. Cohen, Rochester, N.Y., assignor to Eastman Kodak Company, Rochester, N.Y.

No Drawing. Original application Nov. 13, 1967, Ser. No. 682,530. Divided and this application July 15, 1970, Ser. No. 62,750
Int. Cl. C09h *7/00*
U.S. Cl. 106—125 5 Claims

Compositions comprising a hardenable colloid and a hardening amount of a low molecular weight, nonwandering compound having the structural formula:



wherein each R is hydrogen, an aliphatic or aromatic radical, and R^2 and each R_3 are hydrogen or a lower alkyl radical.

3,687,699

GRANULATING TACKY ELASTOMERIC MATERIALS

Robert M. Prosser, Wilmington, Del., and Nelson A. Thomas, Valley Station, Louisville, Ky., assignors to E. I. du Pont de Nemours and Company, Wilmington, Del.

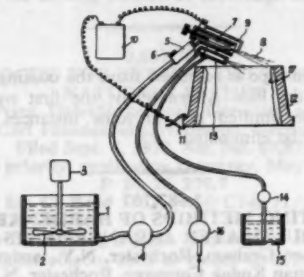
No Drawing. Filed Nov. 29, 1968, Ser. No. 780,226
Int. Cl. B44d *1/094*
U.S. Cl. 117—4 5 Claims

Tacky, elastic, agglomerative solid materials such as chloroprene polymers are granulated by mechanical cutting in processes in which (1) water is sprayed into the vicinity of the cutting action at the rate of from .02 to .15 pound per pound of tacky material, (2) enough air, having a relative humidity less than 60% and a temperature not over 20° C., is brought into contact with the spray to evaporate substantially all of it, and (3) simultaneously a dusting agent such as talc is brought into contact with the tacky material being cut, at the rate of .02 to .10 pound per pound of tacky material.

3,687,700
METHOD OF APPLYING A THERMAL INSULATING COATING TO AN INGOT WALL

Pierre Blancquart, Vert-Saint-Denis, France, assignor to Societe a Responsabilite Limitee Doittau Produits Metallurgie

Filed Dec. 18, 1969, Ser. No. 886,138
Claims priority, application France, Dec. 30, 1968, 182,512
Int. Cl. B28b *7/36, 7/38*
U.S. Cl. 117—5.1 6 Claims



A method and composition for applying thermally insulating coatings to ingot molds, by spray coating a substantially nonaqueous suspension of refractory material such as silica, alumina, zirconia or magnesia, passing through a screen having a mesh opening of 0.149 mm., a low density heat-insulating material such as pearlite, diatomaceous earth or wood flour, passing through a screen having a mesh opening of 0.297 mm., a binder for green strength which is a flocculable clay such as bentonite, and a binder for dry strength which is a synthetic resin or sodium silicate or gum arabic, in suspension in an alcohol having 1–3 carbon atoms, white spirit or toluene. The sprayed particles and the sprayed surface are given opposite electrical charges to attract the particles to the surface.

3,687,701
THERMOPLASTIC RELEASE COATING

Theodore J. Reinhart, Jr., Dayton, Ohio, assignor to the United States of America as represented by the Secretary of the United States Air Force

No Drawing. Filed Nov. 23, 1970, Ser. No. 92,163
Int. Cl. B44d *1/14, 1/34*
U.S. Cl. 117—6 3 Claims

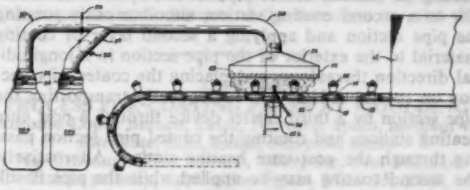
A prime coat of thermoplastic release material is applied to the metallic or thermosetting resin surface of an airplane or radome prior to coating the surface with an outer coat of thermosetting, resin-based paint. The thus interposed thermoplastic layer is useful in that it and the outer, thermosetting resin-based paint may be easily removed, at a later time, by the steps of (a) applying heat until the thermoplastic release material softens and (b) scraping or sanding.

3,687,702
DUSTING METHOD AND APPARATUS

William E. Le May and Richard F. Glennon, Kettering, Ohio, assignors to Baxter Laboratories, Inc.,

Filed June 17, 1966, Ser. No. 558,507
Int. Cl. B05b *7/26;* B44c *1/06*
U.S. Cl. 117—16 13 Claims

A method and apparatus for dusting a tacky object utilizes impeller means and guide means to move air upwardly at a predetermined velocity, and means for injecting small dust particles into the upward air draft to form a stationary cloud of dust particles supported by the draft. An object to be dusted, such as rubber gloves, is placed in

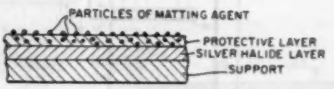


the upward air draft and stationary cloud to be coated with a fine, uniform film of dust particles.

3,687,703
PRODUCTION OF PHOTOGRAPHIC SENSITIVE MATERIALS

Azusa Ohashi and Mamoru Ishiwata, Odawara-shi, Japan, assignors to Fuji Shashin Film Kabushiki Kaisha, Kanagawa-ken, Japan

Continuation-in-part of application Ser. No. 744,610, June 26, 1968, which is a continuation of application Ser. No. 409,178, Nov. 5, 1964. This application Sept. 3, 1969, Ser. No. 866,782
Int. Cl. B44d *1/094;* G03c *1/32*
U.S. Cl. 117—16 15 Claims

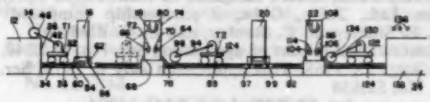


A photographic material comprising a photographic emulsion layer on a support is coated with a dry powdered matting agent applied to the emulsion layer, or to the uppermost layer above the emulsion layer, to prevent injury from self-adhesion or from contact with various parts of a photographic apparatus.

3,687,704
METHOD FOR COATING PIPE

Richard C. Stanley and Jesse M. Lewis, Tulsa, Okla., assignors to Midwestern Specialties, Ltd., Tulsa Okla.

Continuation-in-part of abandoned application Ser. No. 635,830, May 3, 1967. This application July 21, 1970, Ser. No. 56,822
Int. Cl. B05b *5/02;* B44d *1/094*
U.S. Cl. 117—17 7 Claims



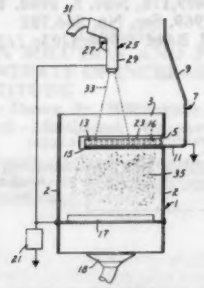
A method for coating pipe which consists of transporting a pipe section to a heating station by means of a first carrier device, rotating the pipe section during the heating thereof, transporting the heated pipe section to a first

coating apparatus by means of a second carrier device, rotating the heated pipe section and simultaneously applying an initial layer of coating material to the exterior of the pipe in a longitudinal direction therealong, transporting the initially coated pipe section by the second carrier to a second coating station, simultaneously rotating the pipe section and applying a second layer of coating material to the exterior of the pipe section in a longitudinal direction therealong, and placing the coated pipe section on special saddles and subsequently transporting the pipe section by a third carrier device through a post cure heating station, and rotating the coated pipe section passing through the post cure heating station. Alternatively, the second coating may be applied while the pipe is still sufficiently hot to eliminate the second heating operation.

3,687,705
POWDER SPRAY PROCESS

George J. Kilbane, White Bear Lake, Minn., assignor to Minnesota Mining and Manufacturing Company, St. Paul, Minn.

Continuation-in-part of application Ser. No. 812,023, Apr. 1, 1969. This application Sept. 23, 1970, Ser. No. 74,795
Int. Cl. B05b *5/02*; B44d *1/094*
U.S. Cl. 117—17 **15 Claims**



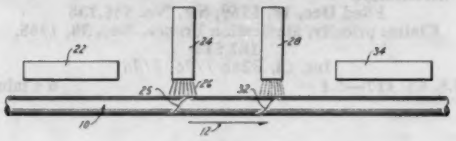
A process for applying particulate material, generally powdered adhesive, to substrates such as honeycomb core, such process involving spraying electrostatically charged particles through openings in a grounded substrate beyond which is located a backing electrode charged to a potential greater than the potential of the substrate and of a like polarity to the electro-statically charged particulate whereby the particulate is coated on the edges of such openings facing the backing electrode.

3,687,706
METHOD FOR COATING PIPE

Richard C. Stanley, Charles R. Thatcher, and Ernest C. Poore, Tulsa, Okla., assignors to Midwestern Specialties, Ltd., Tulsa, Okla., a partnership composed of F. E. Stanley, R. C. Stanley, and C. C. Bledsoe

Continuation-in-part of application Ser. No. 752,240, Aug. 13, 1968. This application July 6, 1970, Ser. No. 52,638
Int. Cl. B05b *5/02*; B44d *1/094*
U.S. Cl. 117—18 **4 Claims**

A method of coating pipe, or other objects, which comprises cleaning the object to be coated, preheating the object, applying an initial wet barrier coating to the heated object, applying a second coating by spraying a powdered coating material onto the initially coated object, and post heating the coated pipe. The length of pipe, or the like, to be coated is moved through the various coating stages whereby the coating is applied in a continuous operation throughout the length of the pipe, and the completely coated pipe is removed from the coating area for storage, or the like. Alternatively, the first wet barrier coat may be omitted and in some instances the post heating may be eliminated.



3,687,707
COATING METHODS OF HARDENABLE MULTILAYER ARRANGEMENTS

James Leo Graham, Rochester, N.Y., assignor to Eastman Kodak Company, Rochester, N.Y.

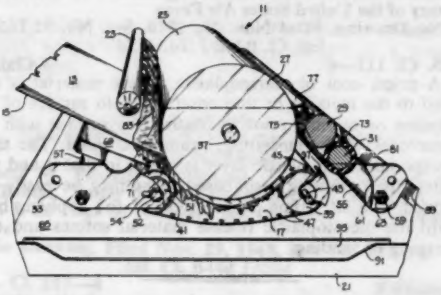
No Drawing. Filed Apr. 29, 1970, Ser. No. 33,046
Int. Cl. G03c *1/30, 1/74*
U.S. Cl. 117—34 **12 Claims**

This invention relates to an improved method of coating upon a support several superimposed distinct layers comprising hardenable organic hydrophilic colloid and a vinylsulfonyl alkyl hardener. The improvement comprises adding the vinylsulfonyl alkyl hardener to less than all the layers of the hardenable organic hydrophilic colloid to uniformly harden all the hardenable organic hydrophilic colloid in all the layers.

3,687,708
LIQUID DEVELOPMENT OF LATENT ELECTROSTATIC IMAGES

George J. Miller, Skokie, Ill., assignor to SCM Corporation, New York, N.Y.

Filed May 21, 1969, Ser. No. 826,603
Int. Cl. G03g *13/10, 15/10*
U.S. Cl. 117—37 LE **16 Claims**



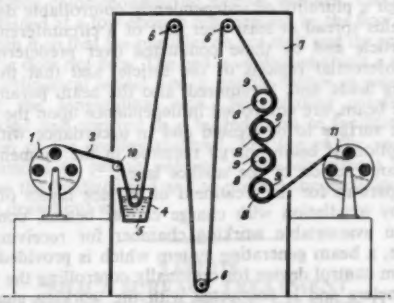
A latent electrostatic image on a surface of a carrier moving along a developing path is developed into a visible image by bringing the image-bearing surface into contact with developing liquid and transporting it over an elongated distance in substantially constant spaced relation to an electrically conductive surface of an image intensifier. The developing liquid is applied to the surface of the image intensifier which moves along the developing path,

and the image-bearing carrier is transported past the moving surface by an endless transport belt moving at substantially the same speed as the image-bearing carrier so as to avoid relative movement therebetween and hence eliminate scuff marks on the back of the carrier. After movement past the image intensifier, the image-bearing carrier is passed between a pair of rotatably driven squeegee rollers which remove excess developing liquid from the carrier and press the visible particles into the surface thereof. The squeegee rollers are wiped by a porous wiper which extends into contact with the moving surface of the image intensifier so as to become soaked with developing liquid on the moving surface of the image intensifier.

3,687,709
PROCESS FOR RUBBING DRESSING ON NATURAL LEATHER
Josef Prinz, Unterflockenbach, Germany, assignor to Carl Freudenberg, Weinheim, Germany
Filed Sept. 4, 1970, Ser. No. 69,875
Claims priority, application Germany, May 29, 1970, P 20 26 279.7
Int. Cl. B44d *1/32, 1/44;* C14c *11/00*
U.S. Cl. 117—64 R **3 Claims**

Process for rubbing liquids, dressings or waxes on the surface of flat objects, such as pieces or strips of leather and linoleum, characterized in that these strips or pieces are carried on a conveyor belt over which a cylindrical brush, rotating and simultaneously vibrating in the transverse direction, is disposed at right angles in such a manner that the bristles of the brush contact the surface of the flat object. For leather, the brush frequency of vibration is about 12 to 16 vibrations per second and the amplitude about 1 to 25 mm., and the belt speed is about half the brush peripheral speed, the bristles moving in the same direction as the belt when they contact the leather.

3,687,710
METHOD FOR TREATING PHOTOGRAPHIC FILM
Samuel H. Bunchez, % Vacuumate Corporation, 427 W. 42nd St., New York, N.Y. 10036
Continuation-in-part of abandoned application Ser. No. 592,493, Nov. 7, 1966. This application May 25, 1971, Ser. No. 146,842
Int. Cl. B44d *5/08;* C08h *9/00*
U.S. Cl. 117—64 **2 Claims**

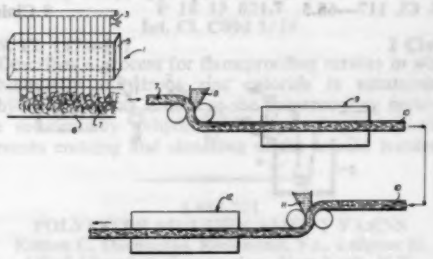


The assembly is used to effect a method for treating exposed photographic film strip for use in projectors. The exposed photographic film is fed through a bath of lubricating material specifically employed for treating exposed photographic film. Film strip is fed into the lubricant bath to completely coat both sides thereof. The coated strip is then sequentially fed through a heated drying zone to dry the lubricant material thereon and subsequently the film is buffed on both dry, coated sides in a polishing work station to smooth the coating along both faces and the edges thereof. In a specific embodiment of the invention, the film is fed through a sinuous path between at least two polishing rollers located at a polishing work station to effect the desired smoothing operation. Other specific embodiments of the invention are also disclosed.

3,687,711
PROCESS FOR COATING PAPER BY MOULDING
Antonio Lopez Blanco, Leiza, Navarre, Spain, assignor to Eurokote, S.A., Leiza, Navarre, Spain
No Drawing. Filed Mar. 6, 1969, Ser. No. 805,014
Claims priority, application Spain, Mar. 15, 1968, 351,667
Int. Cl. B28b *7/38;* D21h *1/48*
U.S. Cl. 117—64 C **1 Claim**

This invention relates to a process for treating paper and other flexible supports so as to produce a coated product which provides a more uniform coating and a gloss greater that can be obtained by conventional processes for making stucco paper.

3,687,712
WEAR RESISTANT NONWOVEN FABRIC
Ludwig Hartmann, Blutenweg 1, Oberflockenbach, Germany
Filed Apr. 16, 1968, Ser. No. 721,648
Claims priority, application Japan, Feb. 10, 1968, 43/8,322
Int. Cl. C23f *17/00;* D04h *3/03*
U.S. Cl. 117—68 **6 Claims**

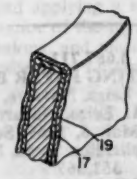


Nonwoven fabric made up of substantially continuous filaments having a relatively low denier and impregnated with binder material concentrated at both major surfaces thereof. Method of making such bonded fabric by introducing binder in the form of a fluid foam onto both surfaces of a nonwoven fleece, preferably sequentially, and drying such binder in a manner such that the binder particles tend to migrate and concentrate at the fabric surface.

3,687,713
PROTECTIVE COATING FOR SURFACES OF SILVER AND MIRROR FABRICATION
Harvey N. Adams, Collingswood, N.J., assignor to Denton Vacuum Corporation, Cherry Hill, N.J.
Continuation-in-part of application Ser. No. 727,211, May 7, 1968. This application Mar. 15, 1971, Ser. No. 124,544
Int. Cl. B44d *1/16*
U.S. Cl. 117—71 R **13 Claims**

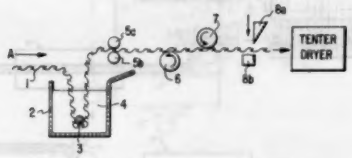
The present invention includes a protective coating for highly reflective surfaces of silver or silver alloys and is accomplished by applying a transparent layer of aluminum oxide to the surface of silver to be protected and thereafter applying a transparent layer of quartz (silicon dioxide) over the layer of aluminum oxide. In addition

the silver is secured on its non-reflecting surface to a layer of chromium-nickel alloy. The entire four layer package can be readily secured to a siliceous substrate, to a plastic substrate or to a highly polished metal substrate and will



withstand the normal testing program. Further if there is a layer of aluminum between the chromium-nickel alloy and certain substrates the entire package can be readily peeled off these substrates as is sometimes necessary when producing large mirrors.

3,687,714
PROCESS FOR MAKING A MATERIAL FOR SHOE OR BOOT MANUFACTURE
Franz Gustav Rheude, Speyer, Franz Munster, Limburgerhof, Pfalz, and Harald Brehmer, Neuhofen, Pfalz, Germany, assignors to Gebr. Giulini G.m.b.H., Ludwigshafen (Rhine), Germany
Filed Oct. 28, 1970, Ser. No. 84,605
Claims priority, application Germany, Oct. 30, 1969, P 19 54 687.3
Int. Cl. C09j *7/04*
U.S. Cl. 117—68.5 **8 Claims**

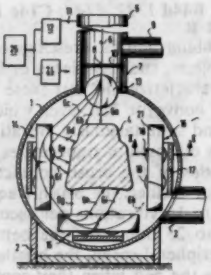


In a method for manufacturing shoes or boots, a material forming a stiffener and a foot-contacting surface is made by providing a fabric with an aqueous dispersion containing 10–35 weight-percent butadiene-styrene copolymer having carboxyl groups, smoothing one surface of the dispersion on the fabric, solidifying the dispersion for bonding the fibers of the fabric together, reinforcing the side of the fabric opposite to the smoothed side with a thermoplastic coating, and placing on the thermoplastic coating an adhesive for enabling lamination.

3,687,715
ARTIFICIAL LEATHER HAVING POLYURETHANE SURFACE FINISH LAYER
Koji Kigane, Shinichi Yamada, and Kazuo Koga, Mihara, Japan, assignors to Teijin Limited, Osaka, Japan
No Drawing. Filed Apr. 20, 1970, Ser. No. 30,279
Claims priority, application Japan, Apr. 24, 1969, 44/31,912
Int. Cl. B32b *27/12, 27/40;* D06n *3/00*
U.S. Cl. 117—76 R **8 Claims**

An artificial leather composed of a fibrous substrate, a microporous polyurethane layer, and a polyurethane surface finish layer coated on said microporous polyurethane layer wherein a surface-unfinished article consisting of said substrate and said microporous polyurethane layer has specified ranges of thickness, apparent density and rate of water vapor permeability; said polyurethane surface finish layer has a specified range of thickness; and the polyurethane in said surface finish layer is a modified polyurethane comprising a polyol of a specified content of a polyoxyethylene segment and producing films having specified ranges of stress at 10% elongation and rate of water vapor permeability. The modified polyurethane of such composition and nature contributes to the excellent water vapor permeability, toughness, and physical or mechanical properties of the artificial leather.

3,687,716
METHOD AND APPARATUS FOR ELECTRON BEAM TREATMENT OF SURFACE LAYERS
Karl-Heinz Steigerwald, 1a Haderunstrasse, 8 Munich 55, Germany
Filed Nov. 12, 1969, Ser. No. 875,670
Claims priority, application Germany, Nov. 13, 1968, P 18 08 719.5
Int. Cl. B44d *1/50*
U.S. Cl. 117—93.1 GD **39 Claims**



A method of treatment of surface layers, more particularly for setting varnish layers, of articles by irradiation with charge carrier beams, more particularly electron beams, in which the article is inserted in a working chamber maintained at reduced pressure and a charge carrier beam generating from a beam source is conducted only through free apertures into the working chamber and there on the surface layer to be treated, characterised by the feature that the beam is conducted successively through a plurality of independently controllable deflecting fields spread at least over part of a circumference of the article and by these conducted over predetermined circumferential regions of the article, and that the deflecting fields, and, if required, also the beam parameters of the beam, are controlled in dependence upon the form of the surface to be treated and in accordance with the absorption of beam energy required in the momentarily irradiated region of the surface layer.

Apparatus for the treatment of surface layers of articles by irradiation with charge carrier beams, comprising an evacuatable working chamber for receiving the article, a beam generating system which is provided with a beam control device for optionally controlling the beam parameters and is connected with the working chamber via an irradiation path extending only through exposed apertures, and a deflecting device for producing a controllable deflecting field in the entry region of the working chamber where a beam produced in the beam generating system enters the working chamber, characterised by the feature that at least one further deflecting device is arranged in the neighbourhood of the deflecting device so that the beam on leaving the first deflecting device is conducted through the further deflecting device where it may be further deflected, and that for controlling the deflecting devices, a deflection control device is

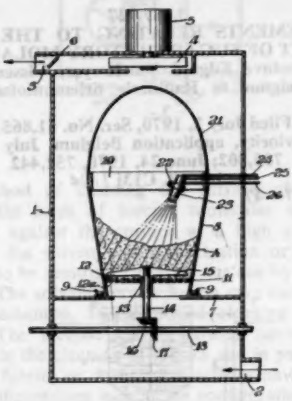
provided which is controlled from a main control device in dependence upon the shape of the surface to be treated, preferably according to a programme, so that according to the irradiation requirements to be fulfilled in an article there is a predetermined connection between the adjustment of the deflection control device and the irradiation conditions required at this point.

3,687,717

METHOD OF COATING PARTICLES BY ROTATING A FLUIDIZED BED OF THE PARTICLES

Derek A. Philip, Loughton, England, assignor to Pfizer Inc., New York, N.Y.

Filed July 7, 1969, Ser. No. 839,275
Claims priority, application Great Britain, July 26, 1968, 35,733/68
Int. Cl. B44d *1/08*
U.S. Cl. 117—100 A 10 Claims



Finely divided particles are coated by spraying the coating material onto a rotating fluidized bed of the particles. Anhydrous citric acid particles of approximately 100 mesh size are thus sprayed with a solution of fully hydrogenated lard in isopropanol; enzyme particles are thus sprayed with a solution of polyethylene glycol in carbon tetrachloride, or hydroxypropyl methyl cellulose in a methylene chloride-industrial alcohol mixture. The bed is maintained at a low enough temperature by the flow of air through it so that the particles do not melt and the sprayed coating does not flow. The bed is contained above a screen in a cylindrical vessel and a paddle within it rotates it about the longitudinal axis. The coating solution is atomized and sprayed in a heated form to facilitate dispersion of the coating material. The top of the vessel is foraminous to permit passage of the air stream which creates the fluidized bed and to prevent the particles from being drawn out with it.

3,687,718

SILICA SURFACE TREATMENT

Richard J. Morrison, Northborough, and Sidney D. Ross, Williamstown, Mass., assignors to Sprague Electric Company, North Adams, Mass.

No Drawing. Filed Nov. 28, 1969, Ser. No. 880,963
Int. Cl. H05k *1/00*
U.S. Cl. 117—106 A 4 Claims

The method concerns the preparation of a silica surface of an electrical device for receipt of an adherent photoresist coating. It involves subjecting the device to a temperature and for a time sufficient to remove from the silica surface all adsorbed H_2O. Thereafter, the surface is contacted with an organochlorosilane in the vapor state.

3,687,719

METHOD OF IMPROVING ADHESION OF VULCANIZED ACTIVE REENFORCING FILLER CONTAINING RUBBER COMPOSITIONS TO METALS

Erhard Klotzer, Hanau am Main, and Johannes Pochert, Wesseling Bezirk Cologne, Germany, assignors to Deutsche Gold- und Silber-Scheideanstalt, Frankfurt am Main, Germany

No Drawing. Filed July 5, 1967, Ser. No. 651,154
Claims priority, application Germany, July 6, 1966, D 50,490
Int. Cl. B32b *15/08*; C08c *19/10*
U.S. Cl. 117—132 BF 4 Claims

Method of improving the adhesion of vulcanized rubber compositions to metals comprising admixing (1) active reenforcing extremely finely divided silicas and/or aluminum silicate and/or calcium silicate or calcium carbonate, if desired, blended with carbon black, and (2) components capable of resin formation with the rubber composition before it is vulcanized on the metal. The quantity of the silicas or silicates or calcium carbonate alone or blended with carbon black admixed with the rubber composition is 5 to 100, preferably, 10 to 50 parts by weight per 100 parts by weight of rubber. A further improvement in the bond obtained can be achieved by admixture of heavy metal oxides with the rubber components prior to the vulcanization.

3,687,720

PROCESS FOR FLAMEPROOFING TEXTILE MATERIAL

Werner Grunewalder, 89 Am Falder, 4 Dusseldorf-Holthausen, Germany

No Drawing. Filed Nov. 26, 1969, Ser. No. 880,377
Claims priority, application Germany, Dec. 6, 1968, P 18 13 021.7
Int. Cl. C09d *5/18*
U.S. Cl. 117—137 2 Claims

Describes a process for flameproofing textiles in which substantially anhydrous zinc chloride in substantially anhydrous solvents is used as the flameproofing material, the substantially anhydrous flameproofing composition prevents creasing and shrinking of the treated textiles.

3,687,721

POLYESTER MULTIFILAMENT YARNS

Kimon C. Dardoufas, Richmond, Va., assignor to Allied Chemical Corporation, New York, N.Y.

No Drawing. Filed May 19, 1969, Ser. No. 825,987
Int. Cl. B32b *27/06, 27/36*
U.S. Cl. 117—138.8 F 3 Claims

An improved multifilament yarn having a lubricating protective film allowing higher stretching for increased molecular orientation is prepared by applying to the yarn a liquid composition of about 0.4 to about 1.5 weight percent based on the weight of the yarn, said film composition comprising decaglycerol tetraoleate, glycerol monooleate, ethoxylated tall oil fatty acid, sulfated glycerol trioleate, ethoxylated alkylamine and a lubricant of hexadecyl stearate. Other additives, such as antioxidants may be added as well as the composition may be aqueous or nonaqueous.

3,687,722

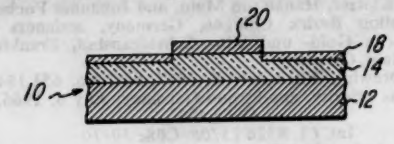
METHOD OF COATING SELECTIVE AREAS OF THE SURFACE OF A BODY

Arjun Nath Saxena, Princeton, N.J., assignor to RCA Corporation

Filed Mar. 10, 1971, Ser. No. 122,719
Int. Cl. B44d *1/18, 1/50, 1/52*
U.S. Cl. 117—212 4 Claims

A pre-selected area of the surface of a body of an electrical insulating or semiconducting material is coated with a film of a material which normally adheres well to the body material. This is achieved by first implanting into the unselected area of the surface of the body ions of

a material which prevents good adherence of the material of the film to the body. The film is then coated over the entire area of the surface of the body so that the film



has good adherence to the body over the pre-selected area but poor adherence over the ion implanted area. The poorly adhered portion on the film is then removed, such as by ultrasonic agitation.

3,687,723

LOW DENSITY DIELECTRIC COATING FOR ELECTRODE IN ELECTRON TUBE

Thomas B. Hutchins IV, 310 NW. Brynwood Lane, Portland, Oreg. 97229

No Drawing. Filed Mar. 17, 1970, Ser. No. 20,397
Int. Cl. B44d *1/18;* H01j *1/00*
U.S. Cl. 117—222 9 Claims

Magnesium carbonate is mixed with an additive in a liquid carrier and deposited in a thin film on a substrate. Suitable additives are certain high vapor pressure compounds which decompose into volatile products at relatively low temperatures without passing through a liquid phase. After deposition the film is allowed to dry on the substrate and then the coated substrate is baked at a sufficient temperature to purge the additive and convert the magnesium carbonate to magnesium oxide. The voids left by vaporization of the additive result in a low density porous layer of magnesium oxide on the substrate which has desirable mechanical and electrical properties. Suitable additives are azodicarbonamide, ammonium carbamate and ammonium tetrafluoroborate.

3,687,724

ELECTROLYTIC ANODE

Carl D. Keith, Summit, Alfred J. Haley, Jr., Florham Park, and Robert M. Kero, Cranford, N.J., assignors to Engelhart Minerals & Chemicals Corporation

No Drawing. Application Nov. 21, 1969, Ser. No. 878,953, which is a continuation-in-part of application Ser. No. 786,407, Dec. 23, 1968, now Patent No. 3,616,329. Divided and this application Mar. 5, 1971, Ser. No. 121,523
Int. Cl. B01k *3/04, 3/06*
U.S. Cl. 117—230 10 Claims

An improved anode for the electrolysis of brine is comprised of a corrosion resistant valve metal substrate and a thin adherent exterior coating consisting essentially of ruthenium oxide and a carbide, the carbide being inert to the electrolysis environment. An especially effective anode has a coating of ruthenium oxide and boron carbide.

3,687,725

MAGNETIC RECORDING MEDIA

Job-Werner Hartmann, 1 Frankenstrasse, 6700 Ludwigshafen, Germany; Hans Joerg Hartmann, 12 Im Sandgarten, 6706 Wachenheim, Germany; Georg Schnell, 21 Freinsheimer Str., 6700 Ludwigshafen, Germany; and Roland Falk, 3 Vogesenstrasse, and Werner Balz, 4 Strassburger Str., both of 7601 Willstaett, Germany

No Drawing. Filed June 5, 1970, Ser. No. 43,924
Claims priority, application Germany, June 9, 1969, P 19 29 171.5
Int. Cl. H01f *10/02*
U.S. Cl. 117—235 8 Claims

Magnetic recording media comprising a non-magnetic support and a magnetic layer based on magnetic pigment and binder, wherein the magnetic layer contains a mixture of a non-magnetizable powder of a silicate having sheet structure (Mohs' hardness less than 6), e.g. talc, and a non-magnetizable powder with cube-shaped to spherical particles of hard oxides, carbides or nitrides of aluminum, boron, silicon and/or chromium, e.g. corundum.

3,687,726

ALUMINA COATED CHROMIUM DIOXIDE

Donald George Pye, Wilmington, Del., assignor to E. I. du Pont de Nemours and Company, Wilmington, Del.

No Drawing. Filed Oct. 19, 1970, Ser. No. 82,117
Int. Cl. H01f *1/00, 10/02*
U.S. Cl. 117—234 2 Claims

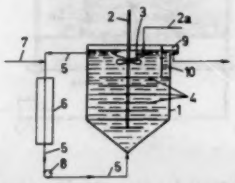
Ferromagnetic chromium dioxide is stabilized with a coating of alumina.

3,687,727

IMPROVEMENTS RELATING TO THE TREATMENT OF SUGAR FACTORY MOLASSES

Romain Gustave Edgard Vandewyer, Vissenaken, Belgium, assignor to Raffinerie tirlemontoise, Brussels, Belgium

Filed July 2, 1970, Ser. No. 51,865
Claims priority, application Belgium, July 8, 1969, 735,802; June 24, 1970, 752,442
Int. Cl. C13j *1/04*
U.S. Cl. 127—47 7 Claims



The process for precipitating a saccharose-lime combination from sugar factory molasses by adding lime to molasses under cold conditions is improved by recycling several volumes of lime treated molasses prior to the separation of the saccharose-lime combination with one volume of untreated diluted molasses. The recycled mixture of lime treated and untreated dilute molasses is passed countercurrent to the direction of lime addition so that the recycled mixture encounters an increasing alkaline gradient. The benefits of this process include improved filterability of the lime-saccharose combination as well as improved stability of this combination.

3,687,728

ALKALINE BUFFER FOR GRANULAR STARCH MODIFICATION REACTION

Anangur V. Subbaratnam, Omaha, Nebr., and Eugene L. Powell, Chicago, Ill., assignors to American Maize Products Company

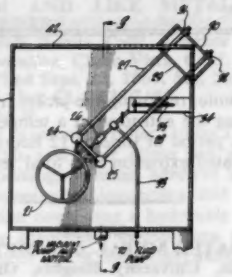
No Drawing. Filed Nov. 2, 1970, Ser. No. 86,310
Int. Cl. C13l *1/08*
U.S. Cl. 127—70 6 Claims

Process of modifying ungelatinized starch which includes adding a water soluble alkali metal salt of an amphoteric metal compound to an aqueous starch slurry to achieve a pH in the range of 9 to 12.5. The process is conducted at temperatures below the gelatinization temperature of the starch.

3,687,729
METHOD AND APPARATUS FOR CLEANING MATERIALS

Lloyd Earl Winburn, 1612 Cornwall Lane, Newport Beach, Calif. 92660, and Jack B. Cunningham, deceased, late of Newport Beach, Calif., by Ethel Peggy Cunningham, executrix, 2012 Commodore Road, Newport Beach, Calif. 92660

Filed Apr. 17, 1969, Ser. No. 817,205
Int. Cl. A47l 7/00; B08b 3/02, 5/04
U.S. Cl. 134—21 4 Claims

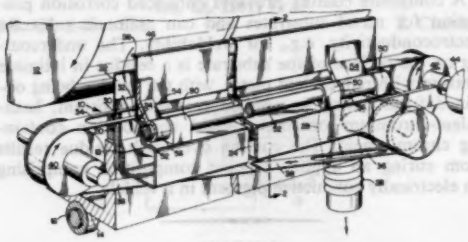


The method of cleaning the surface of an article comprises the steps of forcing molecular sized cleaning solvent against the surface at a high velocity and sucking off the solvent upon penetration or striking of the matter to be removed from the surface by the solvent molecules. The solvent may include a rare earth element, such as lanthanum, for improved cleaning of certain materials. The method and apparatus have particular application in the cleaning of fabrics and in particular the cleaning of fabrics or covering of articles having difficult to clean configurations such as the configurations of lamp shades.

3,687,730
DOCTOR CLEANING METHODS AND APPARATUS WITH SCANNING SUCTION PORT

William M. Murphy, Worcester, and Norman J. Beauchemin, Shrewsbury, Mass., assignors to Lodding Engineering Corporation, Auburn, Mass.

Filed Mar. 15, 1971, Ser. No. 124,288
Int. Cl. B08b 5/04; D21g 3/00
U.S. Cl. 134—21 19 Claims

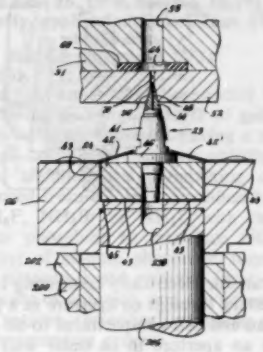


The cleaning apparatus comprises a suction chamber having an open mouth extending along the length of a doctor and a driven endless belt which is guided across the suction chamber mouth in sealing relationship thereto. The belt has one or more openings whose total effective area is small compared to the effective area of the chamber mouth. A high suction port is thus established which scans the doctor to inhale fines collected on the doctor. In a second disclosed embodiment, a belt as described has also sweeping means extending therefrom for sweeping from the doctor deposited matter too large or too heavy to be inhaled through the opening or openings in the belt.

3,687,731
METHOD AND APPARATUS FOR CLEANING CAPILLARY SIZED HOLES IN ARTICLES

Paul Stuart Citrin, New Milford, and Frank Joseph Gurski, Jr., Brookfield, Conn., assignors to Sieburg Industries Incorporated, Danbury, Conn.

Filed May 21, 1970, Ser. No. 39,230
Int. Cl. B08b 91/00
U.S. Cl. 134—22 R 21 Claims



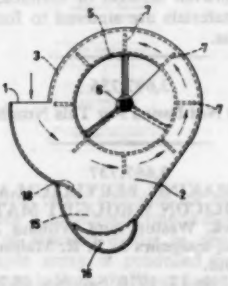
The capillary of an article is cleared of foreign materials by a liquid ram having a pressure exceeding 25,000 p.s.i. The apparatus may also include a drying station utilizing gas flow through the capillary, and elevator means for seating the article in cleaning position having force-limiting means to prevent damage to the article.

3,687,732
Patent Not Issued For This Number

3,687,733
METHOD FOR WASHING CHIPS

John Lars Arvid Larsson, Solna, Sweden, assignor to Aktiebolaget Karlstads Mekaniska Werkstad, Karlstad, Sweden

Filed Nov. 19, 1969, Ser. No. 878,172
Claims priority, application Sweden, Nov. 19, 1968, 15,693/68
Int. Cl. B03d 1/00; B08b 3/04
U.S. Cl. 134—25 R 1 Claim

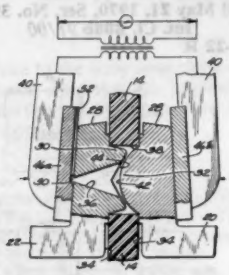


A method for continuously washing chips so as to remove particle impurities in an arrangement which causes the chips to pass in a helical path, the lower part of which runs through a washing liquid.

3,687,734
STORAGE BATTERY ELECTRICAL CONNECTORS

Daniel Orlando, Brookfield, and George Paul Smith, Milwaukee, Wis., assignors to Globe-Union Inc., Milwaukee, Wis.

Filed Aug. 26, 1970, Ser. No. 67,036
Int. Cl. H01m 5/00
U.S. Cl. 136—134 R 15 Claims



A connector for electrically connecting two elements of a storage battery through an aperture in a partition or the element in an end cell compartment to an external terminal through an aperture in an outer wall of the battery casing by the heat fusion technique wherein at least one of the connector lugs is provided with a passage extending horizontally therethrough. Molten material from an internal portion of the connector is extruded through this passage during the heat fusing step and the formation of a small protuberance of this material on the outer surface of the connector lug indicates that the completed connection is not formed by a "cold weld."

3,687,735
METHOD OF MANUFACTURING A SOLID ION CONDUCTIVE COMPOSITION

Kiyoshi Inoue, Osaka, Japan, assignor to Nichicon Capacitor Limited, Nakagyo-ku, Kyoto, Japan

Filed Jan. 5, 1970, Ser. No. 632
Claims priority, application Japan, Feb. 13, 1969, 44/10,597; Feb. 28, 1969, 44/15,138; June 4, 1969, 44/43,732
Int. Cl. C04b 33/00; H01m 43/06
U.S. Cl. 136—153 5 Claims

A solid electrolytic ceramic formed of at least one metal oxide, an aluminum compound and a sodium salt which affords a high sodium ion concentration and high conductivity and an improved method of manufacture wherein the mixture of materials are sintered to form a substantially unitary mass.

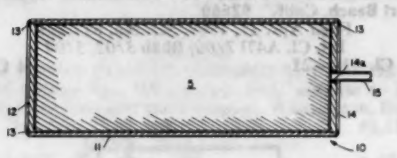
3,687,736
Patent Not Issued For This Number

3,687,737
METHOD OF MAKING BERYLLIUM-ALUMINUM-COPPER-SILICON WROUGHT MATERIAL

Richard H. Krock, Weston, and William J. Richmond, Reading, Mass., assignors to P. R. Mallory & Co. Inc., Indianapolis, Ind.

Filed July 17, 1970, Ser. No. 55,781
Int. Cl. C22f 1/16
U.S. Cl. 148—2 20 Claims

A method of producing wrought material containing beryllium and aluminum and at least one element selected from copper, silicon, zinc and nickel comprising: forming a casting of said material in a mold having high thermal conductivity material; applying a protective metallic coating to said casting; heating the coated casting at a temperature of 600 to 950° F. for a period of 5 to 100 hours; extruding the heated casting at a rate of about 13 to 60 inches per minute; removing the jacket from the extruded casting; heating the extrusion at a temperature of 900 to 975° F. for a period of time of 12 hours to 1 week; and rolling the heated extrusion at a total reduction of 10 to 98%.



3,687,738
COATED METAL AND METHOD

Irving Malkin, University Heights, Ohio, assignor to Diamond Shamrock Corporation, Cleveland, Ohio

No Drawing. Continuation-in-part of abandoned application Ser. No. 788,324, Dec. 31, 1968. This application Dec. 10, 1970, Ser. No. 96,967
Int. Cl. C23f 7/26
U.S. Cl. 148—6.2 20 Claims

A coating of CrO_3 and pulverulent metal in liquid medium proxides excellent corrosion protection for metal substrates as well as electroconductivity, e.g., for weldability and/or application of electrocoat primer. The pulverulent metal, liquids, and the CrO_3, as for example supplied by chromic acid, may be premixed and applied to the metal substrate. Substrates containing such compositions are baked and resulting coated surfaces also exhibit desirable adhesion for subsequently applied topcoats.

3,687,739
COATED METAL AND METHOD

Alexander W. Kennedy, Chardon, and Irving Malkin, University Heights, Ohio, assignors to Diamond Shamrock Corporation, Cleveland, Ohio

No Drawing. Continuation-in-part of abandoned application Ser. No. 788,334, Dec. 31, 1968. This application Dec. 10, 1970, Ser. No. 96,970
Int. Cl. C23f 7/26
U.S. Cl. 148—6.2 20 Claims

A composite coating provides enhanced corrosion protection for metal substrates and can maintain substrate electroconductivity, e.g., for weldability. The undercoating on the surface of the substrate is a residue in intimate mixture with pulverulent metal, with the residue being obtained from curing an applied corrosion-resistant, hexavalent-chromium-containing liquid composition containing chromic acid. The coating over such residue results from curing an applied topcoat composition comprising an electrically conductive pigment in a vehicle.

3,687,740
HEAT RESISTANT CHROMATE CONVERSION COATINGS

Fred Pearlstein and Margaret R. D'Ambrosio, Philadelphia, Pa., assignors to the United States of America as represented by the Secretary of the Army

No Drawing. Continuation of abandoned application Ser. No. 799,973, Feb. 17, 1969. This application Jan. 22, 1971, Ser. No. 109,055
Int. Cl. C23f 7/26
U.S. Cl. 148—6.2 4 Claims

Methods are described for preventing adverse effect of heat on the salt spray corrosion resistance of chemical

chromate conversion coated zinc or aluminum specimens by simply immersing the specimens for a period of about 1 to 3 minutes in a solution of sodium silicate, barium nitrate, or glycerine. The silicates and nitrates are rinsed off after the immersion step and then drain dried whereas the specimens immersed in the glycerine solution are merely drain dried after the immersion step.

3,687,741

METHOD AND SOLUTIONS FOR TREATING TITANIUM AND LIKE METALS AND THEIR ALLOYS

Earl W. Kendall, Bonita, Calif., assignor to Rohr Corporation, Chula Vista, Calif.

No Drawing. Filed Sept. 22, 1969, Ser. No. 860,069
Int. Cl. C23f 7/02
U.S. Cl. 148—6.14 R 20 Claims

Parts formed of titanium or other Group IV transitional sub-group metals and their alloys are prepared for electroplating, anodizing, painting, adhesive bonding, and other surface processing by immersing said metals in a hot aqueous solution containing a hydroxide of an alkali metal, a chelating agent, and at least one of the three trihydroxybenzenes or one of the methyl substituted alpha or beta naphthols.

3,687,742

PROCESS OF MAKING GLASS COATED ELECTRICAL STEEL SHEETS

Karl Foster and Joseph Seidel, Pittsburgh, Pa., assignors to Westinghouse Electric Corporation, Pittsburgh, Pa.

Continuation of abandoned application Ser. No. 46,151, June 15, 1970, which is a division of application Ser. No. 576,963, Sept. 2, 1966, which is a continuation-in-part of abandoned application Ser. No. 556,337, June 9, 1966. This application Mar. 15, 1971, Ser .No. 124,426
Int. Cl. H01f 1/18
U.S. Cl. 148—113 11 Claims

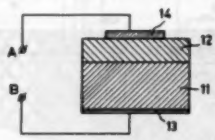
An oriented silicon steel product and method for producing the same is described in which improved magnetostriction and strain sensitivity are obtained by means of bonding a thin glass layer to the surface of the steel.

3,687,743

METHOD OF MANUFACTURING A SEMICONDUCTOR DEVICE CONSISTING OF A TERNARY COMPOUND OF ZnSiAs ON A GaAs SUBSTRATE

Jean-Marc le Duc, Caen, France, assignor to U.S. Philips Corporation, New York, N.Y.

Filed July 13, 1970, Ser. No. 54,099
Int. Cl. H01l 7/38
U.S. Cl. 148—171 2 Claims



A method of manufacturing a semiconductor device comprising a semiconductor portion of a compound of the type $A^{II}B^{IV}C_2^{V}$ or a mixed crystal thereof, A^{II} being one of the elements beryllium, magnesium, zinc, cadmium or mercury of the second group, B^{IV} being one of the elements of the fourth group including silicon, germanium, or tin, and C^{V} being one of the elements of the fifth group of the Periodic System including nitrogen, phosphorus, arsenic or antimony. A compound of this type is epitaxially deposited on a substrate consisting of a compound of the type $A^{III}B^{V}$ or mixed crystal from a melt containing the components of the first-mentioned compound or mixed crystals thereof.

3,687,744

METHOD FOR PRODUCING INJECTION TYPE LIGHT EMITTING SEMICONDUCTOR DEVICES HAVING AN EPITAXIAL LAYER OF NITROGEN-DOPED GALLIUM PHOSPHIDE

Masahiko Ogirima, Shinjuku-ku, Hazime Kusumoto, Minamitama-gun, and Toshimitu Shinoda, Nishitama-gun, Japan, assignors to Dynamit Nobel Aktiengesellschaft, Troisdorf, Germany

Filed June 26, 1970, Ser. No. 50,171
Claims priority, application Japan, June 27, 1969, 44/50,396
Int. Cl. H01l 7/36, 7/38
U.S. Cl. 148—175 20 Claims

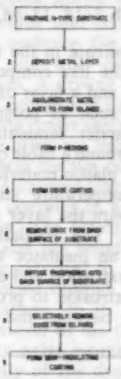
Injection type light emitting semiconductor devices are produced by growing an epitaxial layer of gallium phosphide on a semiconductor substrate having a zinc blende or diamond type crystalline structure utilizing a vapor growth process, simultaneously contacting ammonium halide gas produced from a solid ammonium halide, such as NH_4Cl, NH_4F, NH_4Br or NH_4I, with the growing layer of gallium phosphide to introduce nitrogen into the epitaxial layer of gallium phosphide, forming a p-n junction in the nitrogen-doped epitaxial layer of gallium phosphide by means of diffusion, and providing electrodes on the p and n regions, respectively, utilizing an alloying and a vacuum evaporating process.

3,687,745

LIGHT-SENSITIVE STORAGE DEVICE INCLUDING DIODE ARRAY AND METHOD FOR PRODUCING THE ARRAY

Chuan Chung Chang, Plainfield, Robert Boris Marcus, Murray Hill, and Richard Siegfried Wagner, Bernardsville, N.J., assignors to Bell Telephone Laboratories, Incorporated, Murray Hill and Berkeley Heights, N.J.

Filed Mar. 15, 1971, Ser. No. 123,970
Int. Cl. H01l 7/34, 7/44
U.S. Cl. 148—187 8 Claims



A light-sensitive target structure for use in an imaging device comprises a semiconducting wafer having a high density array of junction diodes in one surface of the wafer. The diode array is produced by: (1) forming islands of gallium, indium, thallium, lead or tin; (2) either diffusing atoms of gallium, indium or thallium directly into the wafer or selectively diffusing an impurity such as boron through molten islands of lead or tin; (3) forming an oxide layer over the entire island-bearing surface; and (4) selectively removing portions of the oxide layer over the metal islands, to expose the islands.

3,687,746
ROCKET PROPELLANT SYSTEM
Herman Bieber, Kenilworth, Lawrence Spenadel, Elizabeth, and David M. Coddington, Irvington, N.J., assignors to Esso Research and Engineering Company
Filed June 16, 1959, Ser. No. 820,826
Int. Cl. C06d 5/10
U.S. Cl. 149—19 10 Claims

1. A rocket propellant which comprises a rubbery sponge having cells and an intercellular matrix of compounded elastomer which is blown and cured, said elastomer being compounded with fuel and with at least 10 wt. percent to about 35 wt. percent of a solid resin selected from the class consisting of polyethylene, polypropylene and mixtures thereof, said weight percent of the solid resin being based on the total of elastomer and resin compounded therewith in the matrix, and said cells being filled with liquid oxidizing agent reactive with the fuel on ignition to generate combustion gas for propulsion, said oxidizing agent and said fuel composing at least 75 wt. percent of the propellant.

3,687,747
GUANIDINE AND LITHIUM PERCHLORATE SALTS AND EUTECTICS
Joseph J. Byrne, Boston, Mass., assignor to Monsanto Research Corporation, St. Louis, Mo.
No Drawing. Filed July 2, 1962, Ser. No. 207,471
Int. Cl. C06b 11/00; C07c 129/00
U.S. Cl. 149—77 3 Claims

1. An intimate combination of guanidine perchlorate and lithium perchlorate selected from the class consisting of the 4:3 molar ratio complex salt and the eutectics of said perchlorates.

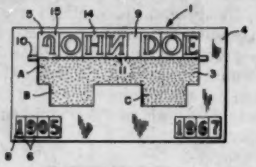
3,687,748
METHOD OF FABRICATING CABLES
Gerald E. Clock and Raymond C. Mildner, Midland, and Harold A. Walters, Beaverton, Mich., assignors to The Dow Chemical Company, Midland, Mich.
Original application Oct. 24, 1968, Ser. No. 770,312. Divided and this application Apr. 9, 1970, Ser. No. 31,444
Int. Cl. H01b 7/18, 13/06, 13/26
U.S. Cl. 156—56 5 Claims

A thermal barrier laminate in the form of a strip for fabricating cables and the like comprises a substrate of, for example, aluminum and a layer of a partially foamed thermoplastic material such as polypropylene. A cable having the thermal barrier laminate is fabricated by wrapping the laminate around a cable core and subsequently extruding a jacket of plastic material over the laminate under conditions of temperature and pressure to substantially completely foam the layer of partially foamed thermoplastic material. The partially foamed thermoplastic layer serves as an insulator to protect the cable core from the heat of extrusion and at the same time expands further during extrusion to provide a substantially continuous inner layer between the cable core and the outer jacket.

3,687,749
METHOD FOR PRODUCING A MOLDABLE PULP COMPOSITION FOR MAKING SHAPED ARTICLES
Rolf Bertil Reinhall, Killingevagen 16, Lidingo, Sweden
Filed Oct. 16, 1969, Ser. No. 866,847
Claims priority, application Sweden, Oct. 23, 1968, 14,338/68; Nov. 7, 1968, 15,107/68
Int. Cl. B29j 5/00
U.S. Cl. 156—62.4 8 Claims

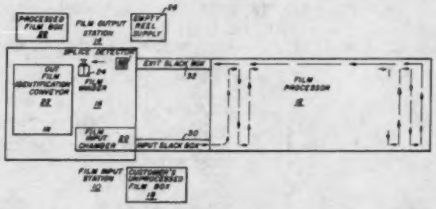
Method for producing a moldable pulp composition by grinding a mass of cellulosic material in a defibration zone in the presence of a gaseous medium at a temperature above 100° C. and at superatmospheric pressure dispersing into the resultant pulp a polymerizable binder and retarding the polymerization thereof during its passage to the molding zone to counteract deposit of said binder material in the passages.

3,687,750
METHOD OF INSCRIBING CEMETERY MEMORIALS
John Jamieson, Chagrin Falls, Ohio 44022
Continuation-in-part of application Ser. No. 645,983, June 14, 1967. This application Jan. 5, 1970, Ser. No. 763
Int. Cl. B44c 1/00
U.S. Cl. 156—63 12 Claims



A method of inscribing cemetery memorials by accurately prearranging individual pre-cut or partially pre-cut letters and the like in the desired order and spaced relation and subsequently taping the several letters together to permit handling of the letters as one or more units for ease of adhesively bonding the several letters in position on the stone to be inscribed by sandblasting.

3,687,751
FILM PROCESSING METHOD
Peter E. Cumbo and James L. Hart, Rochester, Peter T. Kao, West Webster, and George T. Negus, Penfield, N.Y., assignors to Eastman Kodak Company, Rochester, N.Y.
Original application Apr. 30, 1969, Ser. No. 820,379. Divided and this application Feb. 4, 1971, Ser. No. 112,533
Int. Cl. B31f 5/00; G03d 15/04
U.S. Cl. 156—64 9 Claims



A method for continuously processing sequentially a plurality of film strips wherein the individual lengths or strips of film are spliced into a substantially continuous strip which is passed through a film processor. The individual lengths of film can be identified by an identification means having an input at the input end of the processor and an output at the output end of the processor. Film identifier carriers are presented sequentially by the identification means to the input end of the processing apparatus, and the film identifier carrier advances from the input end only after a fil midentifier for a film strip is inserted therein and the corresponding strip of film is

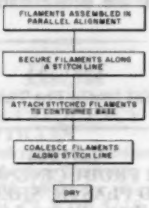
fed to the film processor. The carriers are moved by conveyor driving means in synchronization with the film processor so that the film identifier carrier and the corresponding processed and finished film are delivered to the output end of the processor substantially simultaneously. The output of film from the processor occurs only when the corresponding film identifier is at the output end of the processor.

3,687,752

METHOD OF ANCHORING HAIR-LIKE SYNTHETIC FILAMENTS TO A WIG BASE

Frank S. Riordan, Jr., St. Louis, Mo., assignor to Monsanto Company, St. Louis, Mo.

Filed Sept. 4, 1970, Ser. No. 69,892
Int. Cl. A41g *5/00*; B32b *5/02*
U.S. Cl. 156—72 2 Claims


FILAMENTS ASSEMBLED IN PARALLEL ALIGNMENT
SECURE FILAMENTS ALONG A STITCH LINE
ATTACH STITCHED FILAMENTS TO CONTOURED BASE
COALESCE FILAMENTS ALONG STITCH LINE
DRY

A method is herein described for locking hair-like synthetic filaments formed from such materials as acrylic and modacrylic to a wig structure by chemically uniting the filaments at their attached position whereby the filaments are firmly secured in that they remain attached and do not loosen upon brushing and combing the wig structure.

3,687,753

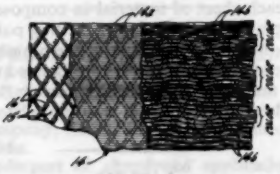
Patent Not Issued For This Number

3,687,754

METHOD OF MANUFACTURING AN ELASTIC NONWOVEN FABRIC

Robert J. Stumpf, Appleton, Wis., assignor to Kimberly-Clark Corporation, Neenah, Wis.

Continuation-in-part of application Ser. No. 769,959, Oct. 23, 1968. This application Apr. 29, 1969, Ser. No. 820,224
Int. Cl. D04h *3/00, 11/00*
U.S. Cl. 156—72 27 Claims



An elastic, high-loft nonwoven fabric with a discontinuous backing layer of adhesive and a multiplicity of heat set elements looped outwardly from the backing and a method of making the fabric by first embedding a web of elements in an open pattern of adhesive, partially consolidating the adhesive into a backing layer while looping the elements outwardly from the backing and heat-setting the elements while minimizing bonding in the partially consolidated adhesive backing.

3,687,755

METHOD OF JOINING DEFORMATION-SENSITIVE ELEMENT TO DEFORMABLE MEMBER

George J. J. Randolph, Jr., R.R. 1, Box 391, Corvallis, Oreg. 97330

No Drawing. Filed Feb. 12, 1971, Ser. No. 115,069
Int. Cl. B32b *31/04, 31/26*
U.S. Cl. 156—89 10 Claims

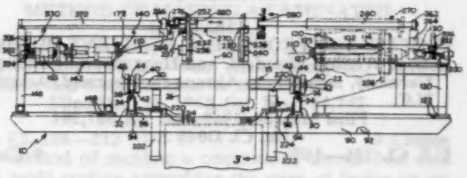
A method of glass-bonding a deformation-sensitive element to the surface of a deformable member. The method contemplates, prior to joining of the element and member, the presurfacing of the element and of a zone on the surface of the member to produce surface finishes thereon with indices less than 16 microinches (RMS).

3,687,756

METHOD AND APPARATUS FOR STRIPPING FLEXIBLE ARTICLE FROM A BUILDING DRUM

Paul E. Appleby, Cuyahoga Falls, and Denver C. Folden and Paul R. Stuhldreher, Akron, Ohio, assignors to The Goodyear Tire & Rubber Company, Akron, Ohio

Filed July 6, 1970, Ser. No. 52,229
Int. Cl. B29h *17/14*
U.S. Cl. 156—111 19 Claims



Apparatus for mechanically removing a tire or similar annular and flexible article from the drum on which it is built provides a lifting device for moving the tire and drum from a conveyor into cooperating alignment with clasp arms which embrace the tire and drum without distortion thereof and with opposing coaxial spindles which hold the drum. A driving clutch within one of the spindles extends to engage and operate a drum collapsing mechanism within the center shaft of the drum. A carriage on which the clasp arms are mounted moves parallel to the drum axis to carry the tire coaxially off the collapsed drum and over a cantilevered length of one of the spindles. The driving clutch operates in a reversed sense to reexpand the bare drum. The lifting device again moves to receive the drum, and the spindles are retracted, allowing the drum to be returned to the conveyor on which the drum is transported through a plurality of tire component applying stations. In its method aspect the disclosure includes removal of the tire, or like article, from the drum by purely axial movement, free of distortion or movement radially of the drum axis.

3,687,757

METHOD OF MAKING TIRES

Hans Menell, Ahlem, Germany, assignor to Continental Gummi-Werke Aktiengesellschaft, Hannover, Germany

Filed Feb. 9, 1970, Ser. No. 9,494
Claims priority, application Germany, Feb. 8, 1969, P 19 06 294.3
Int. Cl. B29h *17/24*
U.S. Cl. 156—126 2 Claims

A method of producing tires with a belt located between tread surface and carcass and provided with intercrossing strength members, according to which, the belt

with tread strip on one hand, and the carcass on the other hand, are made separately, whereupon the belt and the carcass are united to each other by curving the carcass

into the belt while enlarging diameter of the belt to approximately the extent to which the tire has to be enlarged in diameter during its vulcanization.

3,687,758

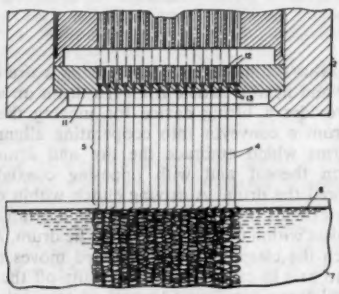
Patent Not Issued For This Number

3,687,759

PROCESS FOR PRODUCING RESILIENT CUSHION

Helmut Werner, Elsenfeld, and Hans Stapp, Momlingen, Germany, assignors to Akzona Incorporated, Asheville, N.C.

Filed Mar. 14, 1969, Ser. No. 807,301
Int. Cl. D04h *3/16*
U.S. Cl. 156—167 **9 Claims**



This invention relates to a resilient filamentary cushioning unit or pad and a process for its production wherein a plurality of substantially amorphous thermoplastic filaments, e.g. fiber-forming polyamide filaments, are melt-spun into a liquid cooling bath in such a manner that they lie in the form of predominately helical to sinuous loops randomly bonded at their points of intersection as the filaments are completely solidified in the bath. The resulting looped and bonded filaments form a cohesive resilient structure which is useful as a spring core or cushioning unit.

3,687,760

Patent Not Issued For This Number

3,687,761

Patent Not Issued For This Number

3,687,762

METHOD OF MAKING A VOID FREE FILAMENT WOUND ARTICLE

Jack Lowrie McLarty, Milwaukee, Wis., assignor to Universal Oil Products Company, Des Plaines, Ill.

No Drawing. Filed Oct. 5, 1970, Ser. No. 78,280
Int. Cl. B65h *81/00*
U.S. Cl. 156—175 **8 Claims**

A method of making a void free resin impregnated glass reinforced filament wound article. When produced without coloring agents, the article is transparent. Deaeration is achieved by precuring the article after filament winding. That is, the article is heated to a temperature less than the temperature at which hardening to the B-stage will occur. This precuring temperature is maintained for at least about 24 hours before the temperature is raised and the curing process is initiated. The properties of the materials used in the resin mix and the temperatures and time intervals at which the steps of this invention are carried out are determinative of the degree of success achieved.

3,687,763

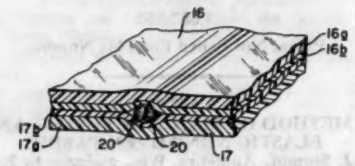
Patent Not Issued For This Number

3,687,764

METHOD FOR PRODUCING A MULTILAYER REINFORCED PLASTIC SHEET MATERIAL

John E. Rogosch, Baton Rouge, La., and Floyd B. Williams, Middletown, Ohio, assignors to Ethyl Corporation, New York, N.Y.

Application Sept. 27, 1967, Ser. No. 670,916, now Patent No. 3,616,130, which is a continuation-in-part of application Ser. No. 634,560, Apr. 28, 1967. Divided and this application Sept. 23, 1970, Ser. No. 74,923
Int. Cl. B32b *7/10*
U.S. Cl. 156—179 **5 Claims**



A flexible, reinforced laminated plastic sheet material made from two sheets of a multilayer thermoplastic material having a web of reinforcing strands received therebetween. The two sheets of material are bonded to each other in the interstices provided in the web. The contacting side of each sheet of material in composed of a layer of a thermoplastic having a lower melting point or sealing temperature than the outer layer of the multilayer thermoplastic material. The inner layers are bonded to each other without the use of any adhesive by passing the two sheets and the enclosed web between rotating heated laminating rolls.

3,687,765

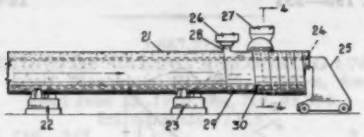
METHOD FOR THERMALLY INSULATING PIPE

Peter M. Maclean, Willowdale, Ontario, Leslie E. Shaw, Etobicoke, Ontario, and Harold Jarvis, Moffat, Ontario, Canada, assignors to Shaw Pipe Industries Ltd., Rexdale, Ontario, Canada

Filed May 11, 1970, Ser. No. 36,354
Claims priority, application Canada, May 17, 1969, 051,864
Int. Cl. B65h *81/02*
U.S. Cl. 156—187 **22 Claims**

A thermally insulating coating is formed on a steel pipe by rotating the pipe slowly about a horizontal axis while

spraying a urethane foam mix onto the upper surface of the pipe, the spray traversing the length of the pipe to build up a uniform layer of polyurethane foam. The pipe surface is maintained at the reaction temperature. An outer sheath of polymeric resin, such as high density polyethylene, is subsequently provided by helically winding a ribbon of the resin onto the coated pipe. The ribbon is extruded in a hot plastic condition and applied directly to the coated pipe after a mastic insulating layer has been formed on the latter.

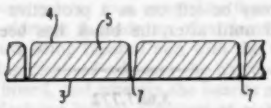


3,687,766

PROCESS AND APPARATUS FOR MANUFACTURING HIGH-FREQUENCY WELDED UPHOLSTERY ARTICLES

Heinz-Gerd Reinkemeyer, Beuthenerstrasse 12, Oberlar, Germany

Filed Dec. 30, 1968, Ser. No. 787,986
Int. Cl. B32b 5/18
U.S. Cl. 156—209 2 Claims



A process and apparatus for producing upholstery having a rolled or quilted appearance by the formation of a plurality of spaced welded seams, wherein the upholstery, including a backing material, a resilient lining material and a surface material, is welded, by means of high-frequency welding, along spaced, substantially-parallel lines between a plate-shaped electrode and a plurality of bar-shaped electrodes and wherein a plurality of rods of predetermined cross-sectional configuration are disposed, between the resilient lining material and the surface material, prior to welding, at least one of the rods being positioned between each adjacent pair of bar-shaped electrodes and extending substantially parallel thereto.

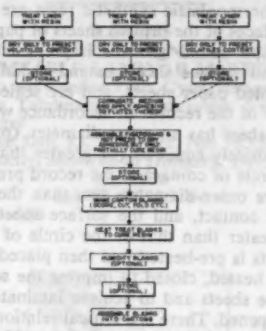
3,687,767

SCORING PROCESS FOR CERTAIN RIGID-WHEN-WET CORRUGATED FIBERBOARD

Abraham J. Reisman, Springfield, Mass., and Thomas B. Wilkinson III, Houston, Tex., assignors to Alton Box Board Company, Alton, Ill., and Monsanto Company, St. Louis, Mo.

Continuation-in-part of abandoned application Ser. No. 647,624, June 21, 1967. This application Feb. 25, 1971, Ser. No. 119,010
Int. Cl. B31f 1/20
U.S. Cl. 156—210 9 Claims

A process for maximizing crack resistance in score lines of rigid-when-wet corrugated fiberboard made using medium and/or liner members pretreated with a resole phenolic resin system which has been modified with urea and inorganic ammonium salt and which preferably contains an organo silyl compound. The process involves forming the corrugated fiberboard using such resin pretreated members under certain controlled temperature conditions, scoring the so-produced corrugated fiberboard, and then heating the so-scored corrugated fiberboard to thermoset the pretreating resin system.



3,687,768

METHOD OF MAKING A LAMINATED BOAT HULL

Allan Holmes Vaitses, Ocean Drive, Mattapoisett, Mass. 02739, and William Van Alan Clark, Jr., Marion, Mass.; said Clark assignor to said Vaitses

Filed Dec. 18, 1968, Ser. No. 784,742
Int. Cl. B29c 17/04
U.S. Cl. 156—212 9 Claims

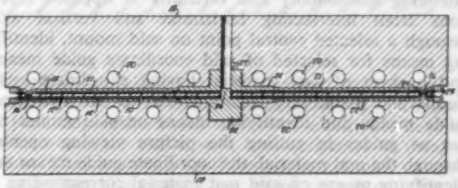
A method of molding a compoundly-curved boat hull on a mold surface comprising the steps of laying up on the mold a first skin; placing upon the first skin a first set of substantially parallel spaced elongated members; laying a continuous membrane adhering to the exposed portions of the first skin; placing a second set of substantially parallel spaced elongated members upon the continuous membrane so as to substantially fill the interstitial valleys between the members of the first set; and laying up a second skin upon the second set of elongated members and upon the exposed portions of the continuous membrane to complete the hull.

3,687,769

LAMINATED PICTURE-TYPE PHONOGRAPH RECORD, AND METHOD OF MAKING THE SAME

Harold F. Dague, 1425 Deauville Place, Costa Mesa, Calif. 92626

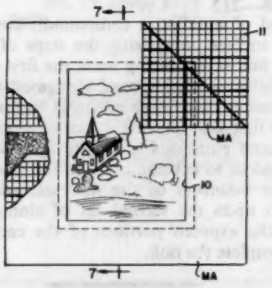
Filed May 18, 1970, Ser. No. 38,232
Int. Cl. B29d 17/00
U.S. Cl. 156—219 13 Claims



Method of making a laminated picture-type phonograph record of a pre-formed or pre-calendered core sheet of

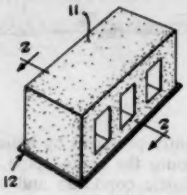
thermoplastic synthetic resin which is colored black or another desired color. Disposed on each side of such preformed core sheet is a sheet of paper which is decoratively printed on the side remote from the core sheet. Two preformed or pre-calendered surface sheets of thin, highly transparent thermoplastic synthetic resin are mounted on the outer surfaces of the printed sheets of paper, and have the phonograph sound grooves impressed therein. The core sheet and surface sheets extend radially outwardly from the printed paper sheets, and are sealed together at the periphery of the record. In accordance with the method, the core sheet has an outer diameter (prior to pressing) approximately equal to (or greater than) the diameter of the circle of contact of the record press, the sheets of paper have outer diameters less than the diameter of the circle of contact, and the surface sheets have outer diameters greater than that of the circle of contact. The stack of sheets is pre-heated and then placed in the press. The press is heated, closed to impress the sound grooves in the surface sheets and to achieve lamination, and then cooled and opened. There is a critical relationship between sheet thickness and the depth of the mold cavity in the record press.

3,687,770
PICTURE MAT AND MOUNT METHOD AND ARTICLE
Marston S. Chase, P.O. Box 19168, Washington, D.C. 20036
Filed May 1, 1970, Ser. No. 33,776
Int. Cl. G09f *1/10*
U.S. Cl. 156—221 **26 Claims**



Materials and a method for mounting a picture in accurate relation on a sheet of mount material and providing a mat with a picture viewing opening of the correct size to frame the picture and provide the proper overlap of the mat onto the edges of the picture adjacent the picture viewing opening, thereby making a neat mounted and matted picture. The mount is provided with coordinate guide means marking equal distance intervals extending horizontally and vertically in opposite directions from intersecting horizontal and vertical axes through a selected central point on said mount, identifying means for selected of said coordinate guide means, and a sheet of mat material having coordinate guide means and identifying means similar to the coordinate guide means and identifying means on said mount for use as guides in cutting the picture viewing opening through the mat material, the coordinate guide means and identifying means on said mat material corresponding to the coordinate guide means and identifying means on said mount being closer to said horizontal and vertical axes by the amount of the desired overlap of the mat onto the edges of the picture at the edges of the picture viewing opening.

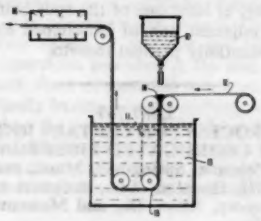
3,687,771
APPARATUS FOR APPLYING A FINISH TO CEMENT BLOCKS OR THE LIKE
Leo Meijer, 4700 N. Ashland, Chicago, Ill. 60640
Filed Sept. 24, 1969, Ser. No. 860,534
Int. Cl. B44c *1/10*; E04c *1/00, 1/40*
U.S. Cl. 156—232 **10 Claims**



After being preheated or by using the retaining heat developed during curing, the concrete block is put on a laminate comprising a plastic or paper base, which has predetermined release characteristics and has been precoated respectively with (1) a plastic resin, with or without (2) a decorative plastic layer and finally (3) a heat-reactive layer of plastic adhesive which secures the laminate to the block.

The inner surface of the release plate to which the plastic resin was affixed will permit removal of the release paper, the plastic layers stay on the block-face. The release plate may be left on as a protective cover during shipping and until after the block has been laid up in the wall.

3,687,772
PROCESS FOR THE PRODUCTION OF A LAMINATED SHEET MATERIAL
Ludwig Klenk, Hallgarten, Rheingau, Dieter Kaempgen, Weisbaden-Freudenberg, Rolf Kersting, Fulda, and Herbert Porrmann, Konigshofen, Germany, assignors to Kalle Aktiengesellschaft, Wiesbaden-Biebrich, Germany
Filed Dec. 19, 1968, Ser. No. 785,237
Claims priority, application Germany, Dec. 21, 1967, P 16 35 532.1
Int. Cl. B29d *7/22, 13/04*; B32b *31/08*
U.S. Cl. 156—242 **5 Claims**



This invention relates to a process for the production of a laminated sheet material including a layer of textile material and a microporous layer of high-polymer plastic material wherein the surface of the laminate comprises polymeric material having a microporous structure provided with embossments. In the process, a solution of high-polymer plastic material is applied to a liquid- and gas-permeable auxiliary sheet material the surface of which has fine projections or depressions corresponding

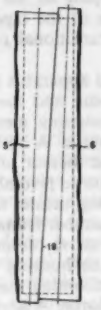
to the desired embossments, the polymer is precipitated on the auxiliary sheet material, a textile sheet material being applied to the layer of high-polymer material prior to precipitation or simultaneously therewith, or afterwards, and the laminate of polymer microporous layer and textile layer is separated from the auxiliary sheet material.

3,687,773

METHOD OF MAKING A FLOORING UNIT

Eric Adolf Wangborg, Pl 4330, Edsbyn, Sweden

Filed June 12, 1970, Ser. No. 45,830
Int. Cl. B32b 31/18
U.S. Cl. 156—265 3 Claims



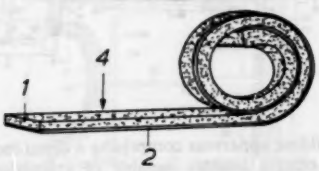
This disclosure relates to a composite flooring wherein each flooring element is made up of at least two boards with each board being tapered and with the wide end of one board being disposed adjacent the narrow end of the next adjacent board, and wherein the boards may be reinforced by underlying boards disposed at right angles to the first boards, only the exposed boards being the wearing boards of the flooring.

3,687,774

METHOD OF RENDERING EXTREMELY FLEXIBLE A RELATIVELY RIGID AND BRITTLE SHEET, PANEL OR ELONGATED BODY OF CELLULAR PLASTIC MATERIAL HAVING COMPRESSIBLE FOAMED CELLS

Alfred Grubstad, Dronningensgate 48/50, Bodo, Norway

Filed Jan. 7, 1970, Ser. No. 1,142
Claims priority, application Norway, Jan. 16, 1969, 173/69
Int. Cl. C09j 5/00
U.S. Cl. 156—324 1 Claim



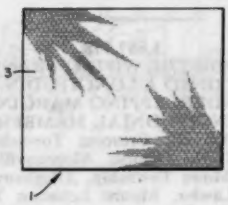
A method of rendering extremely flexible a relatively rigid and brittle sheet, panel or elongated body of cellular plastic material (polyurethane, polystyrene) having compressible foamed cells. At least one surface of the body is during or subsequent to manufacture thereof, in suitable manner provided with and adhered to a flexible, non-stretchable layer or film, to prevent rupture or crack-formation in the stretch area of the bent portion, which would have lead to consequent rupture of the body when said body is subjected to sharp bending.

3,687,775

PROCESS FOR PRODUCING PLIABLE AIR PERMEABLE LAMINAR MATERIAL

Gyorgy Szabo and Sandor Toth, Gyor, Hungary, assignors to Licencia Talalmanyokat Ertekesito Vallalat, Budapest, Hungary

Filed Dec. 13, 1968, Ser. No. 783,541
Claims priority, application Hungary, Dec. 16, 1967, 5A–1838
Int. Cl. C09j 7/04
U.S. Cl. 156—306 2 Claims



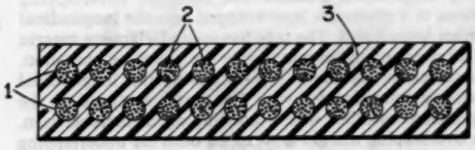
A method of producing a pliable laminar material, such as artificial leather, by providing a woven fabric carrier which may be made, for example, of polyamide and cotton, and then forming on the surface of the carrier a fiber layer containing polyamide and other fibers, said fibers being added to the surface of the carrier, or being formed from the carrier, and then compressing and heating the surface layer to melt only the polyamide at the surface to form a film on the surface.

3,687,776

PROCESS FOR MAKING A HEAT RESISTANT REINFORCED LAMINATE

Pierre Allard, Hameau de Treve-Oray-Cailloux-sur-Fontaines, and Victor Dumas, Sainte-Foy-les-Lyon, France, assignors to Société Rhodiaceta, Paris, France

Filed Nov. 24, 1969, Ser. No. 879,245
Claims priority, application France, Nov. 25, 1968, 175,206
Int. Cl. C09j 5/06
U.S. Cl. 156—306 3 Claims



Laminated materials comprising at least one reinforcing layer produced from a mechanically-stable and heat-resistant yarn, impregnated with a heat-stable resin are flexible and heat-resistant and have a high resistance to delamination. They are made by forming an assembly of one or more layers of reinforcing yarns associated with a textile fabric constituted by a solid heat-stable polymer composition, which when heated passes through a transient liquid phase, and heating the assembly to a temperature and for a time sufficient to liquefy the polymer composition.

3,687,777

ADHESIVE BONDING OF α-OLEFIN HYDROCARBON COPOLYMERS

George Arthur Gallagher, Media, Pa., and Henry Clement Walter, Wilmington, Del., assignors to E. I. du Pont de Nemours and Company, Wilmington, Del.

No Drawing. Application Aug. 10, 1968, Ser. No. 571,393, now Patent No. 3,502,603, which is a continuation-in-part of application Ser. No. 359,441, Apr. 13, 1964. Divided and this application Nov. 20, 1968, Ser. No. 793,633

Int. Cl. C09j 5/02

U.S. Cl. 156—308 12 Claims

A method for bonding a sulfur-curable, chain saturated copolymer of at least one C_2–C_{18} α-monoolefin with at least one non-conjugated hydrocarbon diene to a substrate. The substrate is coated with a new adhesive composition and while in contact with the copolymer heat and pressure are applied.

3,687,778

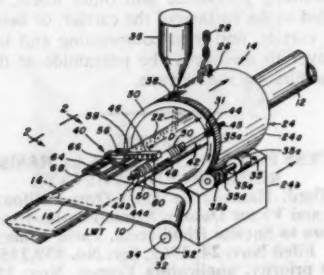
APPARATUS FOR THE WIPING TRANSFER BONDING AGENT ONTO A LONGITUDINAL MEMBER AND AN UNDERLAPPING MARGIN OF A TAPE ON THE LONGITUDNIAL MEMBER

Sylvester A. Cichoski, Crescent Township, Allegheny County, Paul H. Damon, Monroeville, Ronald J. Golembeski, Moon Township, Allegheny County, and William P. Lawler, Mount Lebanon Township, Allegheny County, Pa., assignors to United States Steel Corporation

Filed Feb. 26, 1970, Ser. No. 14,284

Int. Cl. B29c 81/00

U.S. Cl. 156—392 36 Claims



An apparatus for the wiping transfer of a bonding agent onto a longitudinal member and onto the underlapping portions of a protective tape wrapped onto the longitudinal member is disclosed. The tape has an underlapping margin and an overlapping margin during the wrapping operation. The underlapping margin defines with the longitudinal member a transitional cavity. The tape is wrapped on the longitudinal member with a bonding agent therebetween. The overlapping margin is wrapped onto the underlapping margin with the bonding agent between and the transitional cavity is substantially filled with the bonding agent and is then covered by the overlapping margin. The tape has a last wrapped turn on the longitudinal member during the wrapping operation.

The apparatus has a housing disposed about the longitudinal member, and a longitudinal drive means connected to one member of the longitudinal member and the housing for causing relative longitudinal movement between the longitudinal member and the housing along a path of wrapping movement. Wrapping means are provided on the housing for storing the tape and for feeding the tape to the longitudinal member. Rotary drive means are connected to one means of the wrapping means and the longitudinal member for causing relative rotary movement therebetween and for wrapping the tape about the longitudinal member. Bonding agent supply means are adjacent the housing and the longitudinal member for feeding the bonding agent to the longitudinal member ahead of the last wrapped turn of the tape on the longitudinal member. Bonding agent wiping means are adjacent the housing for picking up the bonding agent on the longitudinal member, for transferring the bonding agent on the longitudinal member around the longitudinal member adjacent the last wrapped turn of the tape on the longitudinal member preparatory for the application of the next wrapped turn of the tape, for transferring the bonding agent on the longitudinal member onto the underlapping margin preparatory for the wrapping of the overlapping margin of the next wrapped turn of the tape thereon, and for substantially filling the transitional cavity with the bonding agent.

The above described apparatus may also have a shuttle rotatable on the housing and the bonding agent wiping means may have a mounting member secured to one of the housing and the shuttle. A horizontal mounting means is pivotable on one end thereof of the mounting member. A wiper member frame is pivotable on the other end of the horizontal mounting means and a wiper member is carried by the wiper member frame.

Alternatively, the above described apparatus has a shuttle rotatable on the housing and the bonding agent wiping means has a mounting member secured to one of the housing and the shuttle. A horizontal mounting means is pivotable on one end thereof of the mounting member. A vertical mounting means is carried by the other end of the horizontal mounting means. A wiper member frame is pivotable on the vertical mounting means and a wiper member is carried by the wiper member frame.

3,687,779

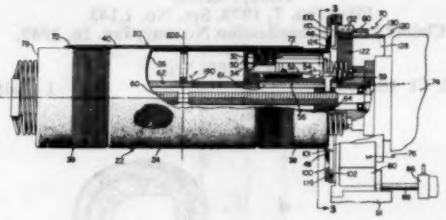
TIRE BUILDING APPARATUS WITH INFLATABLE TURN-UP BLADDER

Denver C. Folden and Arland A. Peck, Akron, Ohio, assignors to The Goodyear Tire & Rubber Company, Akron, Ohio

Filed Feb. 19, 1969, Ser. No. 800,604

Int. Cl. B29h 17/22

U.S. Cl. 156—401 12 Claims



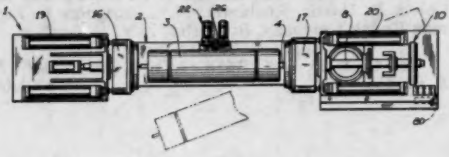
Tire building apparatus comprising a drum including an inflatable central bladder capable of cylindrical and of toric form. The apparatus features inflatable turn-up bladders each cooperable with an axially movable cage for tensioning a ply or plies relative to beads placed thereon as well as independently to move axially toward the central drum and a segmented bead holder operable both to place a tire bead suitably on a tire carcass, as well as to cooperate with the cage or with the associated turn-up bladder.

3,687,780

PIVOTAL TIRE BUILDING MACHINE FRAME HAVING DRUM AND BEAD SETTING UNITS

Samuel R. Fulton, Cuyahoga Falls, and Lawrence E. Beal, Wadsworth, Ohio, assignors to Eagle-Picher Industries, Inc., Cincinnati, Ohio

Filed May 7, 1970, Ser. No. 35,540
Int. Cl. B29h *17/22*
U.S. Cl. 156—403 13 Claims



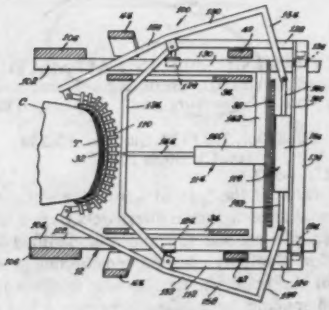
A tire building machine including a frame, having inboard and outboard ends. A collapsible tire building drum is mounted for rotation between the inboard and outboard ends. The inbroad end includes a stationary lower section and an upper section mounted for pivotal movement on the lower section. The drum is rigidly connected to the upper section of the inboard end and detachably connected to the outboard to enable the drum to be pivoted clear of the frame for a removal of a tire carcass therefrom. Bead setting units are mounted on the frame adjacent the opposite ends of the drum for registering bead rings therewith. Each of the bead setter units includes a bead ring holder movable toward and away from the adjacent end of the drum. Each end of the drum includes a sleeve-like receptacle which is adapted for telescopic connection with a respective coaxially aligned sleeve carried by each of the holders to align the bead-rings with respect to the drum. A stitcher mechanism is provided including an adjustment collar having a stepped-like construction to enable the degree of throw to be preset during the stitching operation.

3,687,781

TIRE TREAD STITCHING APPARATUS

Vaughn Rawls and Walter B. Howard, Lima, Ohio, assignors to National-Standard Company, Niles, Mich.

Filed May 25, 1970, Ser. No. 41,152
Int. Cl B29h *17/08, 17/37*
U.S. Cl. 156—412 11 Claims



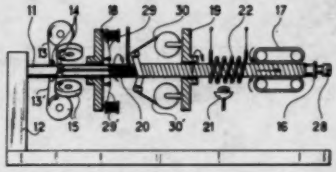
An apparatus for stitching tire tread material onto the peripheries of tire carcasses of different diameters within a given range of diameters, embodying an endless belt and means for bringing the endless belt into engagement with the strip material to properly stitch the same to the periphery of the tire carcass.

3,687,782

MACHINE FOR THE CONTINUOUS PRODUCTION OF HELICAL CIRCULAR WAVE GUIDES

Georges N. Comte, Saint-Leu-la-Foret, France, assignor to Cables de Lyon Alsacienne, Lyon, France

Filed Nov. 18, 1969, Ser. No. 877,725
Claims priority, application France, Nov. 25, 1968, 175,263
Int. Cl. B31c *3/00*
U.S. Cl. 156—425 3 Claims



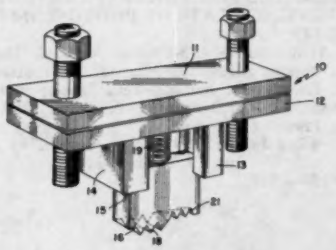
A circular, helicoidal wave guide of given length is continuously formed by making a support of several endless ribbons arranged longitudinally around a fixed chuck to slide virtually along the whole length of the chuck, and applying on the sliding support the various components of the guide, and driving the guide along longitudinally as it is formed, to extract it from the chuck.

3,687,783

GUIDE FOR PLACING REINFORCED YARNS IN PREFORMED GROOVES IN RUBBER

William C. Ross, Winchester, Mass., assignor to W. R. Grace & Co., Cambridge, Mass.

Filed June 24, 1970, Ser. No. 49,400
Int. Cl. B65h *57/04*
U.S. Cl. 156—436 4 Claims



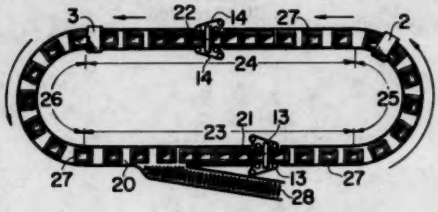
A yarn-laying guide designed to place reinforcing yarns in preformed screw threads in the rubber coated cylinder ply of a belt or printing blanket. A foot, preferably formed of polytetrafluoro ethylene, carries a number of teeth, each of which fits into the screw threads of the base ply. The foot is spring pressed. A yarn guide attached to the foot lays the reinforcing strands directly in the screw threads.

3,687,784

APPARATUS FOR PREPARING A MULTI-LAYER STRUCTURE

Yoshio Ohno, Korekiyo Eda, and Toshio Tamamura, Tokyo, and Kosaburo Yamasaki, Ichikawa-shi, Chiba-ken, Japan, assignors to Kanegafuchi Boseki Kabushiki Kaisha, Tokyo, Japan

Filed May 11, 1970, Ser. No. 36,216
Claims priority, application Japan, May 15, 1969, 44/37,013, 44/44,194
Int. Cl. B29b *5/04*
U.S. Cl. 156—500 16 Claims



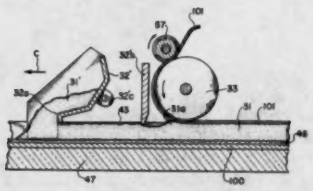
An easily separable uniform multi-layer structure, as a pre-final product, made of a material such as synthetic resin is prepared continuously and economically by constantly dispensing streams of viscous liquid from above into a continuous series of open top, flat-bottomed receptacles as they move in one direction at a constant speed on the horizontal surface of at least one straight section of an endless looped conveyor means to first form a uniform layer of said liquid on the entire floor surface of each receptacle, thereafter depositing a partition sheet material such as paper which is non-adhesive to said viscous liquid onto the upper surface of each of said layers of liquid, and repeating the foregoing steps as said receptacles are continuously carried forward on said looped conveyor. Said multi-layer structure can be easily separated into a plurality of independent layers by subsequently removing the non-adhesive partition sheets from the formed initial multi-layer structure after the remaining components of the latter are solidified and united together within themselves by a treatment such as heat-setting.

3,687,785

APPARATUS FOR THE PREPARATION OF PRINTING PLATE OF PHOTOSENSITIVE RESIN

Kiyoshi Akamatsu, 6–4 3-chome, Wakagi, Itabashi-ku, Tokyo, Japan; Masayasu Maruta, 38 Tsuruoka, Ohi-machi, Iruma-gun, Saitama-ken, Japan; and Yasushi Yonekura, 27–36 3-chome, Nakadai, Itabashi-ku, Tokyo, Japan

Filed June 12, 1970, Ser. No. 45,745
Int. Cl. B29b *7/14*
U.S. Cl. 156—501 6 Claims



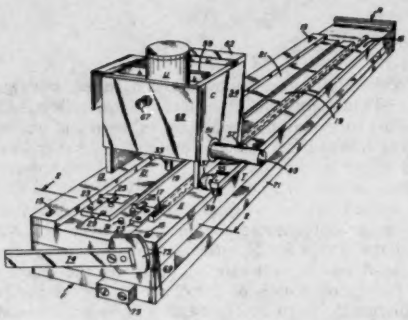
An apparatus for the preparation of a printing plate comprising a layer of photo-sensitive liquid resin, wherein the improvement comprises an application means for laminating an anti-wrinkle plastic sheet on the resin surface upon being doctored and at the same speed with that of the doctor.

3,687,786

APPARATUS FOR SPLICING TOGETHER THE OVERLAPPING ENDS OF PHOTOGRAPHIC FILMS

David A. Williams, Fairport, and Chen-Hsiung Yen and Calvin E. Harris, Rochester, N.Y., assignors to Eastman Kodak Company, Rochester, N.Y.

Filed Aug. 5, 1970, Ser. No. 61,125
Int. Cl. B23k *1/06*; B65h *69/06*; G03d *15/04*
U.S. Cl. 156—502 14 Claims



A simple and inexpensive apparatus for splicing two web ends such as photographic film, comprises a table, a pair of removable and replaceable tracks to be placed on top of the web, a pair of removable and replaceable magnetic clamping strips to be placed on top of the web between the tracks, a motor driven carriage movable along the tracks, and a pivoted ultrasonic transducer on the carriage having a floating horn for uniting the web ends. The carriage is driven by a motor actuated pinion gear which engages a rack on one of the tracks. Removable and replaceable abutment members are provided for properly positioning the clamping strips and the web ends. The table can be in the form of a cantilever to permit a loop of web to have its two ends spliced together.

3,687,787

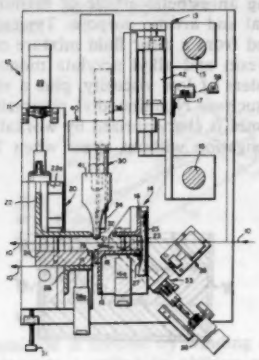
ULTRASONIC SPLICING APPARATUS

John Richard Grand III, Hermitage, Tenn., assignor to E. I. du Pont de Nemours and Company, Wilmington, Del.

Filed Oct. 20, 1970, Ser. No. 82,230
Int. Cl. B65h *21/00*
U.S. Cl. 156—507 1 Claim

An apparatus of the type of advancing a thermoplastic sheet material from a source alternately over a number of paths to separate processing stations is modified to include a means for clamping, cutting, positioning and joining cut ends of the material for alternate advancement. The cutting and splicing mechanism comprises a first clamping means associated with each of the paths for clamping sheet material, a second clamping means positioned between the source of supply for the sheet material and the first clamping means and a cutting device associated with an ultrasonic welder positioned between the first and

second clamping means. The controlled sequence of operation permits the cutting, overlapping, positioning and



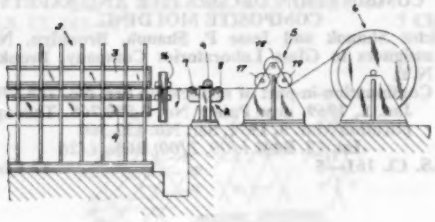
joining of adjacent ply ends of material to proceed automatically.

3,687,788

APPARATUS FOR MAKING CONVEYOR BELTS

Hendrikus Johannus Bongers, Huls, near Krefeld, Germany, assignor to G. Siempelkamp & Co., Krefeld, Germany

Filed Oct. 16, 1969, Ser. No. 866,828
Claims priority, application Germany, Apr. 30, 1969, P 19 21 968.2
Int. Cl. B32b *31/18, 31/20*
U.S. Cl. 156—510 6 Claims



A laminated web of rubber of synthetic resin, with imbedded longitudinal reinforcements, is drawn from a heated platen press through a tensioning device with two lower and an upper roller horizontally spaced apart, one or more blades being disposed in the immediate vicinity of the upper roller to slice the web longitudinally into two or more strips for the manufacture of conveyor belts narrower than the original web.

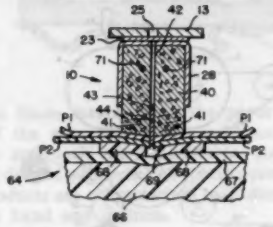
3,687,789

HEAT-SEALING APPARATUS

Mervil C. Wheeler, Bethpage, N.Y., assignor to The Trescott Company, Division of Telesonic Packaging Corporation, Long Island City, N.Y.

Continuation-in-part of application Ser. No. 656,082, July 26, 1967. This application Apr. 8, 1970, Ser. No. 26,617
Int. Cl. B32b *31/18, 31/20*
U.S. Cl. 156—515 11 Claims

This apparatus for heat-sealing and cutting plastic wrapping film comprises a movable, L-shaped upper jaw containing a plurality of lava stone blocks having lower faces, which are V-shaped in cross section. Embedded in and projecting from registering slots formed in the undersides of the blocks at their vertices is a thin metal ribbon. A thermocouple embedded in one block controls a circuit which supplies a first or preheat voltage to the ribbon to heat the surrounding blocks, so that when the upper



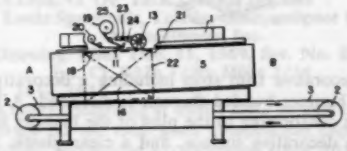
jaw is lowered against layers of film superposed on the lower jaw, its heated undersurfaces seal the layers together without distorting the film. Then an impulse of higher voltage is applied to the ribbon to sever the film. A lubricant is fed to the ribbon, and "Teflon" is used on the lower jaw to prevent fused film from adhering to these parts.

3,687,790

METHOD AND APPARATUS FOR PLATTENING, LABELING AND/OR SEALING FILLED SACKS, PARTICULARLY OF THE GUSSETED TYPE

Peter Wehren, 112a Breitendyk, 4150 Krefeld, Germany; Klaus Vollmer, 27 Gerionstrasse, 4060 Viersen, Germany; Wolfgang Guenther, 7 Huettenmuellerstrasse, 6700 Ludwigshafen, Germany; and Rolf Kick, 8 An den Weihergaerten, 6802 Ladenburg, Germany

Filed Apr. 1, 1970, Ser. No. 24,698
Claims priority, application Germany, Apr. 5, 1969, P 19 17 533.8
Int. Cl. B65c *3/26, 9/02*
U.S. Cl. 156—540 6 Claims



A method of flattening, labeling and/or sealing filled sacks by successively passing the sacks on end on conveying means to pressing elements moving in the same direction but at a greater speed than the sacks, causing the pressing elements to exert pressures on the two flat sides of the sack to evenly distribute and shape the sack contents, causing the sacks to be lifted from the conveying means during application of said pressures and to be labeled and/or sealed with adhesive tape and then causing the pressure forces to be removed and the sacks to be set down on the conveying means again.

3,687,791

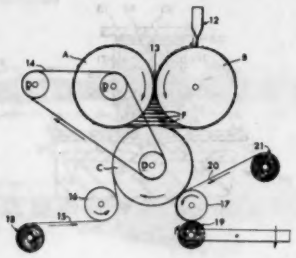
APPARATUS FOR ADHESIVE LAMINATION OF FLEXIBLE WEBS

Leo M. Germain, Shawinigan, Quebec, Canada, assignor to Gulf Oil Canada Limited, Toronto, Ontario, Canada

Original application Oct. 21, 1968, Ser. No. 769,243. Divided and this application Nov. 23, 1970, Ser. No. 92,118

Int. Cl. B32b *31/06, 31/12*

U.S. Cl. 156—549 1 Claim



The invention provides apparatus for applying molten adhesive, especially the "hot melt" type, to a flexible substrate with subsequent adhesive lamination of the substrate, by generating tacky fine filaments of the molten adhesive between a pair of moving surfaces, depositing the tacky filaments onto the flexible substrate while precluding contact between the substrate and the moving surfaces, then adhesively securing the substrate as a lamina to another lamina by means of the deposited tacky filaments.

3,687,792

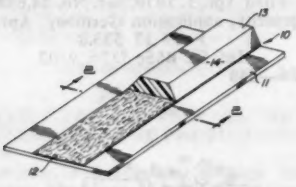
DECORATIVE TRIM STRIP

Charles Ernest Ruff, Lakewood, Ohio, assignor to The Standard Products Company, Cleveland, Ohio

Filed Nov. 25, 1969, Ser. No. 879,754

Int. Cl. B44f *1/00;* B60r *13/02*

U.S. Cl. 161—4 24 Claims



A decorative trim strip including a decorative surface and a bumper bonded thereon is disclosed. A pigmented pattern conforming to the plan of the bumper is provided on the decorative surface, and a clear plastic bumper is bonded to the decorative surface and superimposed on the pigmented pattern so that the plastic bumper assumes the color of the pigmented pattern.

3,687,793

FINELY MOLDED DECORATIVE AND STRUCTURAL ARTICLES

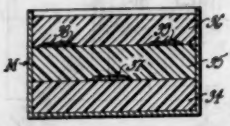
Elvin M. Bright, Encino, Calif. (17242 Bircher St., Granada Hills, Calif. 91344)

Continuation-in-part of application Ser. No. 686,170, Nov. 28, 1967. This application Aug. 28, 1970, Ser. No. 67,920

Int. Cl. B29g *7/00;* B32b *27/38;* C08g *30/10*

U.S. Cl. 161—5 20 Claims

Molded decorative and/or structural elements or panels are formed of a transparent and/or internally colorable, synthetic, thermosetting resin composition which is curable at room temperature and has the capability to embed up to 90% of high density particles suspended by micronized silica or, alternately, to contain internally visible objects, thus providing an esthetic article of manufacture having both structural and artistic purpose. Typically, the article is polymerized from a clear fluid mixture of bisphenol-A type epoxy resin and alkyl acrylate monomer dissolved in glycidyl esters of low viscosity, plus a viscosity-lowering catalyst such as N-aminoethyl piperazine; the resulting interpolymer is characterized by workability of 150% to 300% elongation without stress when 75% polymerized. The polymer characteristically does not recede from mold face in casting and hence may be formed with fine engraving-like surface configurations. Wafer-thin castings of flexible, incompletely cured polymer may be permanently bonded to rigid surfaces by coating with silicone resin adhesive and silicone polymerization catalyst. Thus, surface coverings of such composition may be laminated permanently to another body while completing polymerization of the composition in intimate contact with an adhesive also undergoing polymerization. Wood as well as metal surfaces may be simulated, the latter by incorporation of insoluble mineral salts.



3,687,794

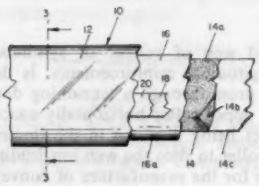
COMBINATION DECORATIVE AND SAFETY COMPOSITE MOLDING

Victor Shanok and Jesse P. Shanok, Brooklyn, N.Y., assignors to Glass Laboratories Company, Brooklyn, N.Y.

Continuation-in-part of application Ser. No. 788,578, Jan. 2, 1969, now Patent No. 3,590,768. This application Mar. 9, 1971, Ser. No. 122,360

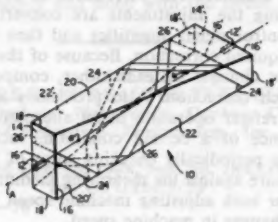
Int. Cl. B44f *1/00, 7/00;* B60q *1/26*

U.S. Cl. 161—5 12 Claims



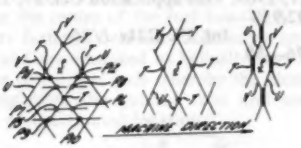
A combination decorative and safety composite molding intended for use as border trim for an automobile rear window or at some other such advantageous location wherein said composite molding, which includes a strip of metallic foil, during daylight simulates the appearance of chromium trim and at night has a strip of light reflective material and an associated strip of transparent colored material which reflect light impinging thereon to thereby provide a significant safety function, said strips being encapsulated with a shell of transparent thermoplastic material.

3,687,795
TUBULAR LAMINATE
Robert A. Elkin, 3043 Cheyenne Road, Riverside, Calif. 92506
Filed Jan. 28, 1970, Ser. No. 6,334
Int. Cl. E04c 3/30
U.S. Cl. 161—47 1 Claim



Tubular laminate is formed by winding or laying tape around an elongate mandrel in oblique relation to the longitudinal axis thereof. The mandrel gradually increases in thickness and proportionately decreases in width in one longitudinal direction, so that the perimeter of the mandrel is constant throughout its length. The tape is preferably impregnated with liquid resin, which, when cured, bonds together and imparts rigidity to the windings to thereby provide the tubular laminate. The mandrel is subsequently removed.

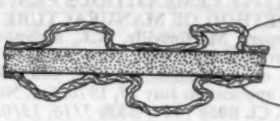
3,687,796
COMPOSITE HIGH-LOFT MATERIAL FOR BLANKETS
Robert J. Stumpf, Appleton, and William J. Mattes, Neenah, Wis., assignors to Kimberly-Clark Corporation, Neenah, Wis.
Filed Mar. 30, 1970, Ser. No. 23,929
Int. Cl. B32b 5/26, 7/12; D04h 3/04
U.S. Cl. 161—67 7 Claims



A laminated material suitable for use in blankets and the like, having two layers of high-loft, nonwoven fabric having a discontinuous backing layer of flexible adhesive, and a multiplicity of fibers individually looped outwardly from the backing layer with the ends of each loop embedded in the backing layer. The two fabric layers are arranged with the two backing layers facing each other, e.g., laminated to opposite sides of a thin sheet of foam material or scrim, or simply laminated directly to each other.

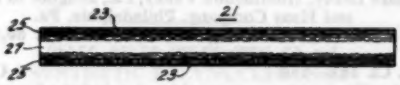
3,687,797
RESILIENT CELLULOSIC WADDING PRODUCT
Ronald H. Wideman, Menasha, Wis., assignor to Kimberly-Clark Corporation, Neenah, Wis.
Continuation of application Ser. No. 750,300, Aug. 5, 1968. This application Sept. 28, 1970, Ser. No. 76,315
Int. Cl. B32b 3/12, 3/28, 7/14
U.S. Cl. 161—129 10 Claims

Cellulosic paper, particularly cellulosic wadding sheets, upgraded as to resilience, toughness, absorbency and other physical characteristics by the combination with the paper of elastic foam material to provide sheet material useful as heavy duty wipers, disposable washcloths, kitchen toweling, coverings, disposable clothing, draperies and the like. The elastic layer is contracted relative to an absorbent paper while secured to the paper by a pattern of adhesive zones; the degree of contraction permitted by



the elastic foam material and the paper as well as the nature of the adhesive pattern influence product characteristics and such are controllable, particularly bulk, to impart desired properties to specific products. Generally, the products are characterized by Z direction resiliency and good hand and softness.

3,687,798
CORROSION RESISTANT PLASTIC COMPOSITE AND METHOD OF MAKING
Darral V. Humphries, Allentown, Pa., assignor to Bethlehem Steel Corporation
Continuation-in-part of abandoned application Ser. No. 853,071, Aug. 26, 1969. This application Apr. 7, 1971, Ser. No. 132,017
Int. Cl. B32b 5/16
U.S. Cl. 161—156 21 Claims



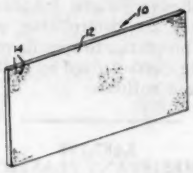
A fiber reinforced plastic composite has two types of fibers. One type of fiber is a ferrous fiber, or a ferrous fiber having a metallic coating. The second consists of a metal having a greater electro negativity than iron, or a ferrous fiber coated with such a metal.

3,687,799
GLASS LASERS OF INCREASED HEAT DISSIPATION CAPABILITY MADE BY ION EXCHANGE TREATMENT OF THE LASER GLASS
Louis Spanoudis, Toledo, Ohio, assignor to Owens-Illinois, Inc.
No Drawing. Filed Dec. 11, 1969, Ser. No. 884,358
Int. Cl. B32b 7/00; H01s 3/16
U.S. Cl. 161—164 8 Claims

Glass lasers containing at least 1 mole percent of lithium oxide based on the total glass composition expressed in oxide content and having a compressive stress surface layer whereby increased strength and increased heat dissipation capability is obtained. The compressive stress surface layer has essentially the same composition as the remainder of the glass laser except that the concentration of lithium ions is less than the remainder of said glass laser, and the concentration of ions of a different alkali metal is greater than the remainder of the glass laser. Laser glasses are generally first acid washed and then contacted with a salt of an alkali metal other than lithium at an elevated temperature and for a sufficient period of time to replace a portion of the lithium ions in the surface of the glass laser with the ions of the different alkali metal and thereby form the compressive stress layer in the surface, but for a time insufficient to produce any substantial relaxation of the stress formed in the surface layer. As a result of

this treatment there is developed on the surface of the glass laser a thin surface layer of low order tension and a thicker underlayer of high compressive stress. The tension surface layer is then removed by acid wash to expose the compression layer.

3,687,800
DECORATIVE CEMENTITIOUS PANEL AND METHOD OF MANUFACTURE
Arthur Scheppers, Martinsville, N.J., assignor to Johns-Manville Corporation, New York, N.Y.
Continuation of application Ser. No. 668,119, Sept. 15, 1967. This application July 27, 1970, Ser. No. 64,072
Int. Cl. B05b *7/14;* **B32b** *5/16, 13/02*
U.S. Cl. 161—162 **6 Claims**

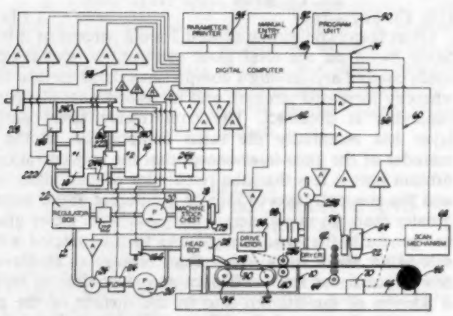


Uncured, cementitious sheets are exposed to particle blasting under conditions which result in the particles adhering to the cementitious material and projecting above the surface of the sheet.

3,687,801
ADHESIVE SYSTEM
Richard Derby, Huntingdon Valley, Pa., assignor to Rohm and Haas Company, Philadelphia, Pa.
No Drawing. Filed Aug. 24, 1970, Ser. No. 66,628
Int. Cl. B32b *27/30, 27/38, 27/40*
U.S. Cl. 161—184 **6 Claims**

An adhesive system comprising a solution of a particular addition polymer and a particular type of polyisocyanate, a method of laminating an acrylic film to a cellulosic substrate using said adhesive system and the laminated product.

3,687,802
CONTROLLING THE MOISTURE, MULLEN AND BASIS WEIGHT OF PAPER
Frederick A. Rummel, Toledo, and Richard J. Shields, Sylvania, Ohio, assignors to Owens-Illinois, Inc.
Filed June 22, 1970, Ser. No. 48,076
Int. Cl. D21d *1/20;* **D21f** *1/06*
U.S. Cl. 162—198 **34 Claims**

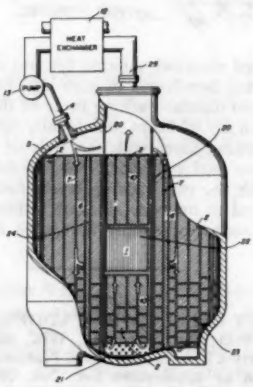


Method and systems for controlling the moisture content, the mullen, and the basis weight of a paper whereby each is measured and if corrections are required, a computer by means of a series of controllers develops the appropriate control signal quantities for adjusting a paper making machine so that the desired measurements are approximated. Included are moisture, mullen, and basis weight controllers, which, respectively, vary the steam supply to a paper dryer, the energy input per fiber supplied by a paper pulp refiner, and the fiber flow to a head box for the machine. The corrections to adapt them for use in making the adjustments are converted to corresponding control signal quantities and then employed to make the required correction. Because of the influence of measurement changes on each other, compensations are made in each correction. Also provisions are made for monitoring refiner operation in an alternative way upon the occurrence of a certain condition, such as a malfunction, for periodically checking some of the measurements to insure against the measuring medium's degeneration, and for both adjusting machine speed and compensating for changes in machine speed.

3,687,803
ACID CHLORIDE ACTIVATORS FOR HYDROGEN PEROXIDE BLEACHING
Martin Grayson, Stamford, Conn., assignor to American Cyanamid Company, Stamford, Conn.
No Drawing. Filed Nov. 9, 1970, Ser. No. 88,242
Int. Cl. D21c *3/20*
U.S. Cl. 162—74 **12 Claims**

An oxygen bleaching composition comprising an oxygen bleach, such as hydrogen peroxide, and an activator, such as benzoyl chloride, useful in the bleaching of textiles and fibrous cellulosic materials such as wood pulp and straw. An improved process for the oxygen bleaching of textiles and wood pulp is also described.

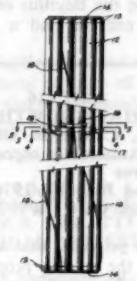
3,687,804
COMPACT AND SAFE NUCLEAR REACTOR
Carroll B. Mills and Robert I. Brasier, Los Alamos, N. Mex., assignors to the United States of America as represented by the United States Atomic Energy Commission
Continuation-in-part of application Ser. No. 833,932, June 17, 1969. This application Oct. 27, 1971, Ser. No. 192,950
Int. Cl. G21c *1/06*
U.S. Cl. 176—50 **3 Claims**



A compact, lightweight and low cost nuclear power reactor that is safe to build and operate. The reactor core contains the absolute minimum critical mass for the nu-

clear fuel used and any change in materials or geometry will reduce the reactivity of the assembly. A beryllium reflector surrounds the core and a liquid moderator-coolant circulates through and around it. The device is enclosed in a pressure shell and control is accomplished by state of the art means. The core can be chemically processed and fabricated in one lot and the reactor will not become critical until the core is surrounded by the beryllium reflector and filled with the liquid moderator-coolant.

3,687,805
PRESSURE TUBE REACTOR FUEL BUNDLE
Gerard P. Desbois, Pierrefonds, Quebec, Canada, assignor to Combustion Engineering, Inc., Windsor, Conn.
Filed Dec. 16, 1968, Ser. No. 784,129
Int. Cl. G21c *3/34*
U.S. Cl. 176—78 **14 Claims**



A bundle fuel element for insertion within a cylindrical guiding tube of a pressure tube reactor. A plurality of fuel rods are arranged to form a cylindrical assembly with spiders engaging the ends of the fuel rods. A spacing means in pressure contact with each of the fuel rods is located near the center of the fuel bundle. A plurality of filaments are fastened between each spider and the spacing means and are arranged to helically pass around the outside edge of the fuel rods whereby the filaments space the assembly from the guiding tube and maintain the spacer at a predetermined location.

3,687,806
METHOD FOR CONTROLLING SEX OF MAMMALIAN OFFSPRING
Gustaaf J. van den Bovenkamp, Mill Valley, Calif., assignor to Bio-Controls, Inc.
Filed Nov. 4, 1969, Ser. No. 873,787
Int. Cl. A61k *27/00*
U.S. Cl. 195—1.8 **6 Claims**

An immunological method for controlling the sex of mammaliam offspring, making use of a sperm fraction, containing a surplus of sex chromosomes of a single type (i.e., X-chromosomes or Y-chromosomes) and of a blood serum containing sperm antibodies, each antibody being selectively reactive by six chromosome with sperm type. Sperm fraction is introduced into the body of a mammal in sufficient quantity to produce antibodies in the blood stream. A blood serum is then taken from the mammal, the blood coagulated and the blood serum containing the antibodies isolated. The blood serum and sperm fraction are then mixed in proportions to effect inactivation and agglutination of between 80 and 100% of the antibodies in reactive excess over its sperm type is unaffected. The agglutinate and any remaining sperm is then precipitated with the supernatant portion containing said unaffected antibodies. These unaffected antibodies are selectively reactive to agglutinate and inactive sperm of only one sex chromosome type.

In one application of the invention, the antibodies reactive with either the X- or Y-chromosomes may be added to semen to agglutinate and inactivate the sperm containing that type of chromosome before insemination. Alternatively, the antibodies may be introduced into the female prior to copulation (e.g., in a vaginal jelly or a vaccine) to provide the possibility of a sex selection at conception.

3,687,807
METHOD FOR EXTRACTING D-XYLOSE FROM XYLAN CONTAINING MATERIAL
Per Stranger-Johannessen, Oslo, Norway, assignor to A/S Norcem
Filed June 10, 1969, Ser. No. 831,849
Claims priority, application Norway, June 11, 1968, 2,276/68
Int. Cl. C07c *47/18*
U.S. Cl. 195—11 **9 Claims**

Xylose is extracted from xylan-containing plant material such as birch wood. The plant material is partially hydrolyzed in a weak acid, for example bisulphite, such that the cellulose content remains substantially unaffected whereas the xylan and at least part of the lignin is dissolved. After neutralizing, the hydrolysate is concentrated and extracted by liquid-liquid-extraction with a polar organic solvent having a dielectric constant of less than 27 at 20° C. The temperature of the extraction step is from 30 to 110° C. and the water content of the extraction system is from 4 to 28% by weight. D-xylose of high purity is obtained by simple crystallization after removal of the extraction solvent.

3,687,808
SYNTHETIC POLYNUCLEOTIDES
Thomas C. Merigan, Jr., Menlo Park, Calif., Fritz Eckstein, Gottingen, Germany, and Eric Desire Alice de Clercq, Hamme, Belgium, assignors to The Board of Trustees of the Leland Stanford Junior University, Stanford, Calif.
Continuation-in-part of application Ser. No. 833,314, June 14, 1969. This application Aug. 14, 1969, Ser. No. 850,154
Int. Cl. C07c *51/52, 51/54*
U.S. Cl. 195—28 N **26 Claims**

Polynucleotides having sulfur replacing one or more of the oxygen atoms bonded to phosphorus are prepared by polymerizing a mononucleotide in which the phosphorus is present in the form of a phosphorothioate having one or more sulfur atoms bonded to the phosphorus. A suitable biocatalyst is used to effect polymerization and where necessary a biotemplate is also used. The resulting polynucleotide thio-analogues have enhanced interferon inducing properties.

3,687,809
PROCESS FOR PRODUCING L-LYSINE FROM L-ASPARTIC ACID
Kiyoshi Nakayama, Sagamihara-shi, and Hiroshi Hagino, Hachioji-shi, Japan, assignors to Kyowa Hakko Kogyo Co., Ltd., Tokyo, Japan
No Drawing. Continuation of abandoned application Ser. No. 563,077, July 6, 1966. This application Aug. 6, 1968, Ser. No. 750,469
Claims priority, application Japan, July 7, 1965, 40/40,381
Int. Cl. C12d *13/06*
U.S. Cl. 195—29 **4 Claims**

A process for producing L-lysine by culturing a microorganism capable of producing L-lysine in an aqueous nutrient medium containing L-aspartic acid and at least a source of carbon and nitrogen under aerobic conditions.

3,687,810

PROCESS FOR PRODUCING L-LYSINE BY FERMENTATION

Sumio Kurihara, Hofu-shi, Yamaguchi-ken, Kazumi Araki, Machida-shi, Tokyo-to, and Katsumi Akeyama and Yoshimasa Takasawa, Hofu-shi, Yamaguchi-ken, Japan, assignors to Kyowa Hakko Kogyo Kabushiki Kaisha, Tokyo, Japan

No Drawing. Filed June 8, 1970, Ser. No. 44,114
Claims priority, application Japan, June 9, 1969, 44/44,624
Int. Cl. C12d *1/00*
U.S. Cl. 195—29 **6 Claims**

The present invention relates to a process for producing L-lysine by fermentation using an L-lysine-producing strain of *Corynebacterium glutamicum* and *Brevibacterium flavum* capable of resisting antibiotics such as penicillin, bacitracin, cycloserine, gramicidin, polymixin and nystatin.

3,687,811

MICROBIOLOGICAL REDUCTION OF 15-KETO PROSTAGLANDIN DERIVATIVES

Frank B. Colton, Evanston, William J. Marsheck, Arlington Heights, and Masateru Miyano, Morton Grove, Ill., assignors to G. D. Searle & Co., Chicago, Ill.

No Drawing. Filed Dec. 18, 1970, Ser. No. 99,655
Int. Cl. C12d *1/02*
U.S. Cl. 195—30 **11 Claims**

Selective reduction of the 15-keto group of 9,15-diketo prostaglandin derivatives is achieved by fermentation with a bacterium of the genera Arthrobacter, Pseudomonas, Nocardia, Corynebacterium, Mycobacterium or Flavobacterium or with a yeast belonging to the class consisting of Rhodotorula and Saccharomyces. The resulting 9-keto-15-hydroxy compounds display useful pharmacological properties, e.g. anti-ulcerogenic, hypotensive and smooth muscle stimulating properties.

3,687,812

Patent Not Issued For This Number

3,687,813

MICROBIOLOGICAL HYDROXYLATION OF 6-SUBSTITUTED-2-ISOPROPYL NAPHTHALENES

Kuang-Chao Wang, Mountain View, Calif., assignor to Syntex Corporation, Panama, Panama

No Drawing. Filed May 14, 1970, Ser. No. 37,293
Int. Cl. C12d *1/00*
U.S. Cl. 195—51 R **5 Claims**

Microbiological processes for hydroxylating 6-substituted - 2 - isopropyl-naphthalene compounds to the corresponding 6-substituted-naphthalene propanols (e.g. 2-(6′-methoxy - 2′-naphthyl)-1-propanol; and 2-(6′-thiomethyl-2′-naphthyl)-1-propanol). The processes are characterized by treating the 6-substituted-2-isopropyl-naphthalene compound with the species of the genus of fungi Aspergillus, identified as *Aspergillus niger*, in the presence of a nutrient medium under conditions conducive to the microbiological agent. The resulting propanol compounds exhibit analgesic, anti-inflammatory, and anti-pyretic activities in mammals and accordingly have utility where such agents are indicated. The propanol compounds can also be converted into the corresponding propionic acid compounds which also have utility as anti-inflammatory, analgesic and anti-pyretic agents in the treatment of mammals.

3,687,814

LINCOMYCIN PRODUCTION

Dennis F. Witz, Kalamazoo, Mich., assignor to The Upjohn Company, Kalamazoo, Mich.

No Drawing. Filed Aug. 28, 1970, Ser. No. 67,965
Int. Cl. C12d *9/00*
U.S. Cl. 195—80 R **6 Claims**

Microbiological process for preparing the antibiotic lincomycin wherein the concomitant production of lincomycin B (4′-depropyl-4′-ethyllincomycin) is significantly reduced by the addition of an effective amount of one or more of the following L-tyrosine compounds: L-dihydroxyphenylalanine (L-dopa), L-tyrosine, natural biological precursors of L-tyrosine, for example, shikimic acid and 4-hydroxyphenylpyruvate, alkyl and phenyl ester derivatives of tyrosine, 4-O-alkyl or 4-O-phenyl ethers of L-tyrosine, 4-O-acylates of tyrosine, and amide derivatives of L-tyrosine to the fermentation medium. The reduction of lincomycin B in the fermentation beer results in increased lincomycin recovery from the fermentation beer.

3,687,815

GERMINATION OF SPORES

Lewis G. Scharpf, Jr., Kirkwood, Mo., assignor to Monsanto Company, St. Louis, Mo.

No Drawing. Filed Jan. 30, 1970, Ser. No. 7,266
Int. Cl. C12b *1/00*
U.S. Cl. 195—96 **6 Claims**

This invention relates to methods and compositions for germinating spores of the Bacillus or Clostridium genera utilizing a protease enzyme and a physiological germinant.

3,687,816

BACTERIAL GROWTH MEDIA

Robert V. Marraro, Columbus, Ohio, assignor to the United States of America as represented by the Secretary of the Air Force

No Drawing. Filed June 17, 1970, Ser. No. 47,120
Int. Cl. C12k *1/06*
U.S. Cl. 195—100 **10 Claims**

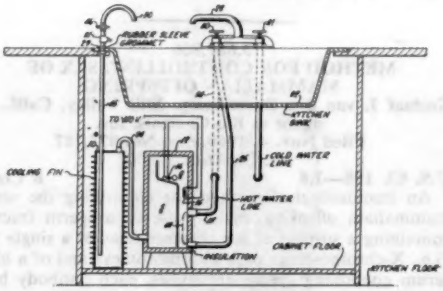
Culture media are provided that are specifically formulated to permit (1) the growth propagation, and maintenance of "cell wall defective" forms of microorganisms and (2) the induction of "cell wall defective" forms of microorganisms from their normal parent forms.

3,687,817

HOUSEHOLD WATER DISTILLATION SYSTEM

Bruce D. Jimerson, 1815 Vallecito Drive, San Pedro, Calif. 90732, and Robert H. Moore, 815 N. 52nd St., Phoenix, Ariz. 85005

Filed May 25, 1970, Ser. No. 40,186
Int. Cl. B01d *3/42*
U.S. Cl. 202—181 **6 Claims**



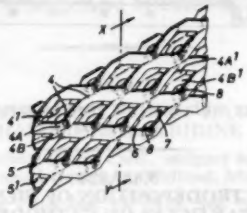
A heating element controlled by a level detecting switch can be used to provide the basic vapor-liquid phase relationship in a fully automatic apparatus for providing distilled water directly from a tap water line. The water line pressure can be used to provide energy for drawing off the purified water and for discharging the residue.

3,687,818

DISTILLATION APPARATUS

Kenneth E. Porter, Stockport, Stephen R. M. Ellis, Birmingham, Neil Ashton, Bishop's Stortford, and Clifford H. G. Hands, Stourbridge, England, assignors to Albright & Wilson Limited, Oldbury, England

Filed Feb. 3, 1970, Ser. No. 8,203
Claims priority, application Great Britain, Feb. 5, 1969, 6,302/69
Int. Cl. B01d *3/14;* F28f *3/08*
U.S. Cl. 202—158 5 Claims



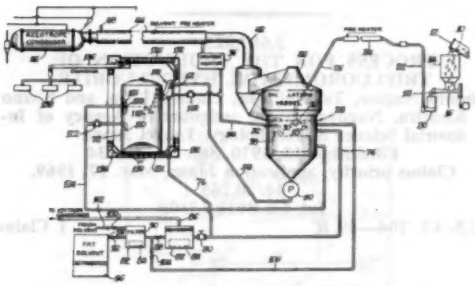
A packing for a distillation column especially useful in low pressure distillations consists of a plurality of plates each comprising two sheets of expanded metal placed back to back in a staggering configuration.

3,687,819

PROCESS AND APPARATUS FOR PRODUCING FAT AND NUTRITIOUS DEFATTED SOLIDS FROM FATTY BIOLOGICAL MATERIAL CONTAINING WATER

Ezra Levin, Champaign, Ill., assignor to VioBin Corporation, Champaign, Ill.

Filed Apr. 3, 1970, Ser. No. 25,422
Int. Cl. A23b *1/04;* B01d *3/36;* C11b *1/10*
U.S. Cl. 203—47 11 Claims



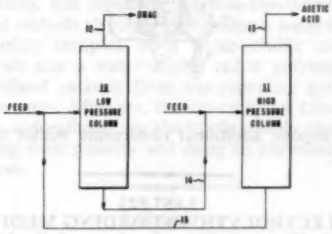
A process and apparatus for dehydrating and defatting fish, slaughterhouse offal, and other fatty biological materials containing water to produce fat and a palatable nutritious solids residue. The fatty biological material is fragmentized and continuously introduced into a distillation vessel with ethylenedichloride or other suitable fat solvent which unites with the water content of the material to form a low boiling azeotrope that is distilled off. Solids fragments dehydrated and defatted in the distillation vessel are continuously removed hydraulically by recirculation of fluid between the vessel and an external screen from which the solids move into a washing and settling vessel for finish cleaning of fat by clean solvent. Clean solids settling in the washing vessel are mechanically removed. Liquid effluent from the screen is returned to the distillation vessel, a portion of the effluent being bled off and further heated in a dehydration vessel to dry the residue of solids entrained therein whereupon the effluent from the dehydration vessel is filtered to remove the dried solids and subsequently processed to separate the fat and solvent constituents of the filtered liquid.

3,687,820

PROCESS FOR SEPARATING MIXTURES OF N,N-DIMETHYLACETAMIDES AND ACETIC ACID BY DISTILLING WITH ALTERNATE PRESSURES

Robert B. Akell and Harold S. Kemp, Wilmington, Del., assignors to E. I. du Pont de Nemours and Company, Wilmington, Del.

Continuation-in-part of abandoned application Ser. No. 811,112, Mar. 27, 1969, which is a continuation-in-part of abandoned application Ser. No. 601,851, Dec. 15, 1966. This application Nov. 23, 1970, Ser. No. 92,225
Int. Cl. B01d; C07c *51/44, 97/16*
U.S. Cl. 203—78 6 Claims



A process is provided for separating N,N - diethylacetamide from a mixture thereof with acetic acid by subjecting such mixtures to plural distillations at different pressures whereby N,N-dimethylacetamide is recovered as distillate from a low pressure distillation zone operating at a pressure between about 50 mm. Hg and about 1 atmosphere and acetic acid is recovered as distillate from a higher pressure distillation zone operating at a pressure between about 1 atmosphere and 4 atmospheres.

3,687,821

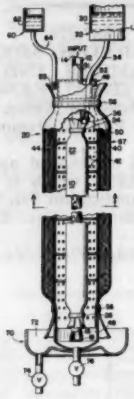
SELF-COOLING CONDENSING APPARATUS AND METHOD

Robert I. Zalles, Lima, Peru, assignor to The Yarnall Atlantic Company, Ltd., Nassau, Bahamas, British West Indies

Continuation-in-part of application Ser. No. 639,896, May 19, 1967. This application Feb. 24, 1970, Ser. No. 13,448
Int. Cl. B01d *1/00*
U.S. Cl. 203—86 17 Claims

An apparatus and method for condensing a vapor being carried by a gaseous fluid in which the fluid and vapor are passed through a thermally conductive surfacing material having a large number of apertures but still presenting a large condensing area. The surface is maintained at a temperature lower than that of the fluid. A fiber mat is placed on the downstream side of the condensing surface, the fiber mat having been previously wetted with purified condensate, and the gaseous fluid being in fully saturated condition, such that upon hitting the condensing surface the fluid will have its temperature lowered and consequently deposit excess condensate on the surface. The deposit of the condensate has the effect of raising the temperature of the gaseous fluid to and beyond its initial temperature. This increase in temperature causes the fluid to become unsaturated. The unsaturated fluid passes through the apertures in the condensing surface and into the fibrous material, where it absorbs a quantity of previously purified condensate. The absorption of the purified condensate by the fluid again lowers the temperature

below the temperature of the fluid at the condensing surface. Lowering the temperature will cause the gaseous



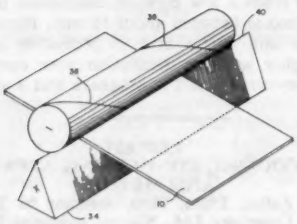
fluid to deposit additional condensate within the fibrous material.

3,687,822

ELECTROLYTIC RECORDING MEDIUM

Arthur S. Diamond, Palos Verdes, and David E. Carr, Playa Del Rey, Calif., assignors to Telantograph Corporation, Los Angeles, Calif.

Filed Apr. 12, 1971, Ser. No. 133,031
Int. Cl. B21h *1/20*
U.S. Cl. 204—2 **17 Claims**



An improved, non-catechol, electrolytic recording medium is disclosed comprising a porous base sheet impregnated with an aqueous medium, including gallic acid as a marking ingredient, an electrolyte comprising an ammonium cation and either a chloride or a nitrate anion, or both species, and a water miscible solubilizer, such as a lower alkanol and/or a glycol.

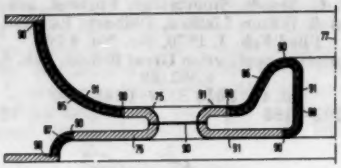
3,687,823

METHOD OF PRODUCING SUPERCONDUCTIVE CAVITY RESONATORS, PARTICULARLY FOR PARTICLE SEPARATORS

Walter Lugscheider, Munich, and Richard Maier, Erlangen, Germany, assignors to Siemens Aktiengesellschaft, Munich and Berlin, Germany

Filed May 27, 1970, Ser. No. 40,799
Claims priority, application Germany, May 31, 1969, P 19 27 825.2
Int. Cl. C23b *5/00, 7/00, 17/00*
U.S. Cl. 204—3 **13 Claims**

A process for producing a superconductive cavity resonator, particularly for particle accelerators, by precipitation of niobium layer on the surface of a metallic carrier structure. A niobium carrier structure is formed. A niobium layer is formed by molten bath electrolysis. The



formed carrier with layer is then degassed under high vacuum.

3,687,824

ELECTRODEPOSITION OF FILMS OF PARTICLES ON CATHODES

Henry Brown, Huntington Woods, and Thaddeus W. Tomaszewski, Dearborn, Mich., assignors to Udylite Corporation, Warren, Mich.

No Drawing. Filed June 19, 1969, Ser. No. 834,901
Int. Cl. C23b; C23b *5/48, 13/00*
U.S. Cl. 204—40 **14 Claims**

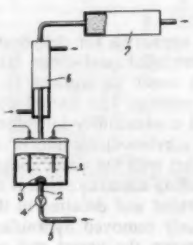
Films of discrete fine particles of inorganic and organic materials can be cathodically electrodeposited at low voltages from aqueous solutions of salts of non-plating monovalent cations such as solutions of sodium sulfate. For example, particles such as barium sulfate, boron and polyvinyl chloride can be deposited on a cathode from solutions of sodium sulfate in which the particles are dispersed. These films of particles can be used as such or can then be rinsed and transferred to plating baths and the films of particles can thus be imbedded in a metal matrix. Such 2-phase composite plates can be used for engineering purposes such as anti-friction applications, and the like, or with multiple plates to obtain excellent protection against atmospheric corrosion.

3,687,825

PROCESS FOR THE PRODUCTION OF TRIFLUOROMETHYL HYPOFLUORITE

Shuniji Nagase, Takashi Abe, Hajime Baba, and Kazuo Kodaira, Nagoya, Japan, assignors to Agency of Industrial Science & Technology, Tokyo, Japan

Filed Mar. 13, 1970, Ser. No. 19,434
Claims priority, application Japan, Mar. 17, 1969, 44/20,265
Int. Cl. B01k *13/00*
U.S. Cl. 204—59 R **1 Claim**



Trifluoromethyl hypofluorite is produced by blowing carbonyl fluoride in a bubble state into anhydrous hydrogen fluoride through which electric current is being passed, thereby fluorinating said carbonyl fluoride.

3,687,826

ELECTROLYTIC REDUCTION OF POLYHALOQUINOLINE AND POLYHALOISOQUINOLINE

James N. Seiber, Davis, Calif., assignor to The Dow Chemical Company, Midland, Mich.

No Drawing. Filed Jan. 25, 1971, Ser. No. 109,633

Int. Cl. C07b 29/06; C07d 33/36, 35/26
U.S. Cl. 204—73 R 7 Claims

Heptachloro and heptafluoroquinoline and isoquinoline are selectively dehalogenated by electrolytic reduction.

3,687,827

ELECTROLYTIC REDUCTION OF HALOGENATED HALOMETHYLPYRIDINE

James N. Seiber, Davis, Calif., assignor to The Dow Chemical Company, Midland, Mich.

No Drawing. Filed Jan. 25, 1971, Ser. No. 109,635

Int. Cl. C07b 29/06; C07d 31/26
U.S. Cl. 204—73 R 5 Claims

Halogens are selectively replaced with hydrogen in halogenated halomethylpyridines by electrolytic reduction.

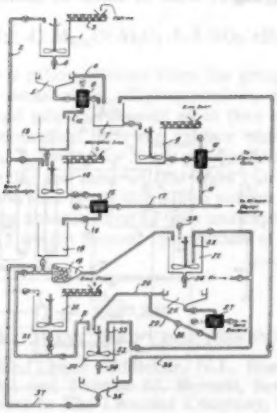
3,687,828

RECOVERY OF METAL VALUES

Robert K. Carpenter, Arnold, Mo., and Richard F. Pagel, Belleville, Ill., assignors to American Zinc Co., St. Louis, Mo.

Continuation-in-part of application Ser. No. 629,580, Apr. 10, 1967, which is a continuation-in-part of application Ser. No. 267,807, Mar. 25, 1963. This application June 25, 1970, Ser. No. 49,713

Int. Cl. C22b 3/00, 19/00; C22d 1/22
U.S. Cl. 204—119 16 Claims



Preparation of zinc electrolyte from zinciferous ore in which the ferritic residue from the usual leach is releached in the presence of a reducing agent such as metallic iron, to produce a filtrate having an iron content of 20–60 grams per liter, and wherein the last-mentioned filtrate is, in successive stages, neutralized and oxidized concomitantly with precipitation of the iron therefrom, first while the pH value is maintained below 4.0 and preferably in the range of 1.5 to 3.6 until the major portion of the iron has been precipitated in a form readily separable from the liquid phase, and second while the pH value of said iron-depleted solution is maintained at a pH value of 4 to 4.5.

3,687,829

DEIONIZATION OF LIQUID MEDIA

Arnold Factor, Scotia, N.Y., assignor to General Electric Company

No Drawing. Filed Jan. 11, 1971, Ser. No. 105,643

Int. Cl. B01d; B01k; C02b 1/82
U.S. Cl. 204—149 10 Claims

Cations and anions are electrochemically removed from aqueous media using a solid anode structure comprising a water-insoluble redox polymer, which, in the oxidized cationic form, has repeating xylylene-bipyridinium units and a solid cathode structure comprising a water-insoluble polyelectrolyte complex of a water-soluble cation exchange resin and a water-soluble redox polymer, which in the oxidized cationic form has repeating xylylene-bipyridinium units. After use, the ion-exchange capacities of the anode and cathode are electrochemically regenerated by reversing their polarity and using an expendable aqueous medium.

3,687,830

PREPARATION OF THIOL ESTERS

Alexis A. Oswald, Mountainside, and Wolfgang H. Mueller, Elizabeth, N.J., assignors to Esso Research and Engineering Company

No Drawing. Continuation-in-part of application Ser. No. 576,504, Aug. 26, 1966. This application Nov. 20, 1968, Ser. No. 777,500

Int. Cl. B01j 1/10; C07c 153/07; C07f 9/02
U.S. Cl. 204—158 R 10 Claims

Thiol esters of thiolcarboxylic acids and thiolphosphoric acids are prepared by reacting the acids with a vinylic halide. The reaction is conducted in the liquid phase in the presence of a free radical initiator. The free radical addition reaction for the formation of the thiol esters is conducted at moderate temperatures and moderately elevated pressures. The products from the reaction, in particular the esters of thiophosphoric acids, are highly effective nematocides.

3,687,831

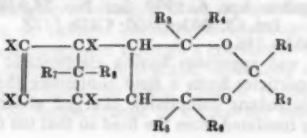
HALOGEN CONTAINING TRICYCLIC COMPOUNDS

Sheldon B. Greenbaum, Livingston, N.J., and Edward D. Weil, Yonkers, and Jack S. Newcomer, Wilson, N.Y., assignors to Hooker Chemical Corporation, Niagara Falls, N.Y.

No Drawing. Continuation-in-part of application Ser. No. 589,811, Oct. 27, 1966, which is a continuation-in-part of application Ser. No. 16,965, Mar. 23, 1960. This application Dec. 26, 1968, Ser. No. 787,245

Int. Cl. C07d 13/00
U.S. Cl. 204—158 HA 8 Claims

Compounds having excellent insecticidal properties and utility as fire retardants have the formula:



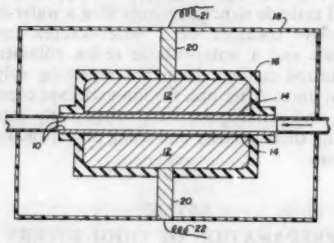
wherein X is halogen, the R substituents can be hydrogen, hydrocarbon or substituted hydrocarbon radicals, and the R_7 and R_8 can additionally be halogen. Halogenation products of the foregoing compounds are especially useful.

3,687,832

PRODUCTION OF IMPROVED POLYMERIC MATERIALS USING ELECTRICAL GAS DISCHARGES

Peter John Fydelor, Wroughton, and Keith Victor Lovell, Swindon, England, assignors to Surface Activation Corporation, Westbury, N.Y.

Filed Nov. 23, 1970, Ser. No. 91,746
Int. Cl. B01k *1/00*; C08; C08f *47/00*
U.S. Cl. 204—165 **13 Claims**



A method of increasing the solvent resistance of the surface of a polymeric material by exposing the same to the active species formed by an electric discharge in a gaseous mixture at a pressure of at least 100 mm. of mercury with the gaseous mixture made up mainly of an inert gas such as argon and a minor proportion of another gas such as oxygen which modifies the active species in the discharge plasma.

3,687,833

PURIFICATION OF LACTOGEN

Alan Parcells and Donald A. Dahlgren, Portage, Mich., assignors to The Upjohn Company, Kalamazoo, Mich.

No Drawing. Filed Mar. 10, 1969, Ser. No. 805,789
Int. Cl. A61k *17/00*; B01k *5/00*; C07g *15/00*
U.S. Cl. 204—180 G **1 Claim**

Human placental lactogen (also known as HPL) is purified by (1) water-miscible organic solvent fractionation and (2) electrophoresis in polyacrylamide gel using a discontinuous buffer system. A more potent product is obtained as determined by immunological and biological criteria.

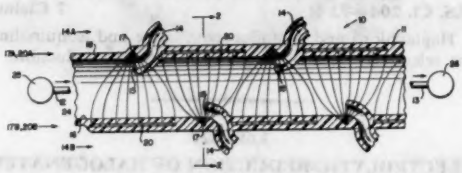
3,687,834

METHOD AND APPARATUS FOR REMOVING PARTICLES FROM FLUID CONTAINING THE SAME

James T. Candor, 5440 Cynthia Lane, Dayton, Ohio 45429

Continuation-in-part of application Ser. No. 864,851, Oct. 8, 1969, which is a continuation-in-part of application Ser. No. 811,421, Mar. 28, 1969. This application Apr. 6, 1970, Ser. No. 25,938
Int. Cl. B03c *5/00*; C02b *1/78*
U.S. Cl. 204—186 **10 Claims**

Method and apparatus having electrostatic means for removing particles from a fluid containing the same, the electrostatic means comprising charged electrode means electrically insulated from the fluid so that the electrostatic field thereof draws the particles into exit means of a passage defining means having the fluid moved therethrough. Such charged electrode means create a plurality of alternately arranged non-uniform fields across the fluid in the passage means so that the particles enter the exit



means adjacent the more intense portions of the non-uniform fields, such electrodes being either externally charged or electrets. Such passage means can comprise means for straight laminar flow of the fluid therethrough by being adjacent or in another passage means having a particle receiving fluid stream flow therethrough.

3,687,835

Patent Not Issued For This Number

3,687,836

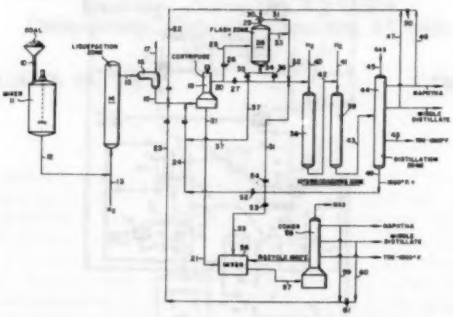
Patent Not Issued For This Number

3,687,837

COAL LIQUEFACTION SOLIDS REMOVAL

Robert J. Fiocco, Summit, N.J., and Edward L. Wilson, Baytown, Tex., assignors to Esso Research and Engineering Company

Filed Aug. 27, 1970, Ser. No. 67,457
Int. Cl. C10g *1/04*
U.S. Cl. 208—8 **7 Claims**



The clarified extract issued from a solids-liquids separation zone (in which the solids are separated from the liquids of a coal liquefaction product according to the size of the solids and concentrated in a separately discharged solids slurry) is improved by adding to the coal liquefaction product a recycle stream selected from a first fraction, boiling within the range from about 100° F. to about

700° F. and recovered from either the clarified extract or the concentrated solids slurry issued from the separation zone, and a second fraction, boiling above about 1000° F. and containing ash solids recovered from the clarified extract. The recycle stream is added in amounts of from about 1 to about 50 weight percent of the feed to the separation zone. It has been found that each of these fractions quite unexpectedly acts as an agglomerating agent for particulate solids in the liquefaction product, increasing the sizes of the particles to separable sizes, thereby providing an increase in the clarity of the coal extract issuing from the separation zone.

3,687,838

COAL DISSOLUTION PROCESS

Walter H. Seitzer, West Chester, Pa., assignor to Sun Oil Company, Philadelphia, Pa.

No Drawing. Filed Sept. 14, 1970, Ser. No. 72,178

Int. Cl. C10g *1/06*

U.S. Cl. 208—10 **4 Claims**

Process for dissolving bituminous coal by heating a mixture of said coal, a hydrogen donor oil, carbon monoxide, water, and an alkali metal or ammonium molybdate at a temperature of about 400–450° C. and under a total pressure of at least about 4000 p.s.i.g.

3,687,839

CONVERSION WITH SYNTHETIC CRYSTALLINE ZEOLITE

Edwin Earl Jenkins, Elmer, N.J., assignor to Mobil Oil Corporation

No Drawing. Original application Apr. 1, 1968, Ser. No. 717,978. Divided and this application Dec. 22, 1970, Ser. No. 100,781

Int. Cl. C10g *11/18, 13/02*

U.S. Cl. 208—111 **8 Claims**

A method of converting hydrocarbons employing a catalyst comprising a crystalline aluminosilicate zeolite having a formula, in terms of mole ratios of oxides, as follows:

$$(1.1\pm.4)\ M_{2/n}O:Al_2O_3:5\text{–}8\ SiO_2:zH_2O$$

wherein M is a cation selected from the group consisting of hydrogen, ammonium, alkylammonium, arylammonium, metals, and mixtures thereof other than a mixture of sodium and potassium, n is the valence of M, and z is between 0 and 8, having an X-ray powder diffraction pattern substantially the same as that shown in Table 1 of the specification said X-ray diffraction pattern being characterized by the absence of odd l lines and capable of sorbing at least 1.5 weight percent cyclohexane at 25° C. and 20 mm. Hg.

3,687,840

DELAYED COKING OF PYROLYSIS FUEL OILS

Morgan C. Sze, Upper Montclair, N.J., Harold Unger, Bronx, N.Y., and Thomas M. Bennett, Scotch Plains, N.J., assignors to The Lummus Company, Bloomfield, N.J.

Filed Apr. 28, 1970, Ser. No. 32,540

Int. Cl. C10g *9/14, 37/00*

U.S. Cl. 208—131 **12 Claims**

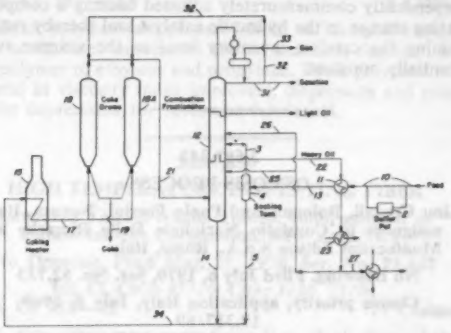
Process for delayed coking of pyrolysis fuel oil wherein the operation includes the following steps, alone or in combination:

(a) addition of sulfur into the pyrolysis fuel oil prior to introduction into a soaking tank,

(b) maintenance of the pyrolysis fuel oil at above 450° F. for at least 5 minutes in the soaking tank before it is passed to the coking heater, and

(c) operation of the heater coil outlet and the coke drum at a pressure of not less than 40 p.s.i.g.

The use of the above steps in the delayed coking process avoids the formation of plugs in the system and facilitates the preparation of high quality cokes from pyrolysis fuel oils.



Optionally, a quench system may be employed in the vapor line leaving the coke drum, particularly where a highly reactive feedstock is used, to prevent vapor phase coking.

3,687,841

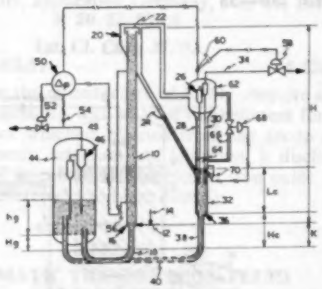
CATALYTIC CRACKING PROCESS

Arthur L. Saxon, Warren, N.J., and Ronald J. Jenkinson, Weybridge, England, assignors to Esso Research and Engineering Company

Filed Oct. 5, 1970, Ser. No. 77,912

Int. Cl. B01j *9/20;* **C10g** *11/18*

U.S. Cl. 208—164 **4 Claims**



In a catalytic cracking process comprising forming a suspension of catalyst particles in hydrocarbon vapors, passing said suspension through a conversion zone wherein said hydrocarbons are cracked, separating said cracked hydrocarbons from the spent catalyst particles, passing said cracked hydrocarbons to a recovery zone, stripping

said spent catalyst particles of residual hydrocarbon vapors in a stripping zone, regenerating said spent catalyst to active catalyst in a regenerator zone and recycling said active catalyst to said conversion zone, the improvement is provided which comprises maintaining a substantially constant catalyst inventory level in the stripping zone essentially independently of any change in the catalyst circulation rate within the conversion zone by interposing a hydraulic catalyst seal between the conversion zone and the stripping zone, whereby upon any change in the catalyst circulation rate within the conversion zone, the pressure within the stripper is independently commensurately adjusted causing a compensating change in the hydraulic catalyst seal thereby maintaining the catalyst inventory level in the stripper substantially constant.

3,687,842

OSMOSIS PROCESS

Lino Credali, Bologna, and Paolo Parrini, Novara, Italy, assignors to Consiglio Nazionale Delle Ricerche and Montecatini Edison S.p.A., Rome, Italy

No Drawing. Filed July 6, 1970, Ser. No. 52,733

Claims priority, application Italy, July 8, 1969, 19,317/69

Int. Cl. B01d *13/00*

U.S. Cl. 210—23 **2 Claims**

Osmosis process utilizing as the semi-permeable membrane a polyamide comprising the reaction product of a piperazine with a dihalide of fumaric acid or of a substituted fumaric acid.

3,687,843

WATER TREATMENT PROCESSES

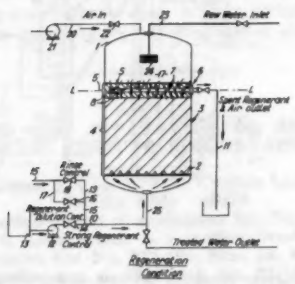
James Ratcliffe Emmett, Purley, England, assignor to Weir Water Treatment Limited, Cathcart, Glasgow, Great Britain

Continuation-in-part of application Ser. No. 730,151, May 17, 1968. This application May 6, 1971, Ser. No. 140,784

Claims priority, application Great Britain, May 18, 1967, 23,010/67

Int. Cl. B01d *15/06*

U.S. Cl. 210—35 **7 Claims**



In effecting multi-stage regeneration of a spent resin following treatment of water by downflowing same through a resin bed in a container housing a collector at the top of the bed, different treating liquids at different stages are passed upwards at different rates through the spent resin and out of the container through the collector and at each stage gas from a source of pressurised gas is continuously passed into the freeboard space and is continuously released from the container through the collector with the liquid so as to prevent formation of a static head above the collector and consequent fluidisation of the bed. The pressure of the throughflowing gas adjusts to the different upflow rates without the need for repeated valve adjustment and repeated viewing of the liquid level.

3,687,844

PURIFICATION PROCESS

Karl Grob and Josef Oertter, Frankfurt am Main, and Paul Wiesner, Oberursel, Germany, assignors to Metallgesellschaft AG, Frankfurt am Main, Reuterweg, Germany

No Drawing. Filed Nov. 25, 1970, Ser. No. 92,934

Claims priority, application Germany, Dec. 24, 1969, P 19 64 989.9

Int. Cl. B01d *15/00;* **B01j** *9/00*

U.S. Cl. 210—23 **6 Claims**

The aqueous refining phase from a solvent extraction step of a mineral wet processing process is purified of extraction agent residues by passing the aqueous refining phase through a granulated layer of hydrophobic material having acid surface action into a sedimentation chamber and withdrawing the thus purified refining phase from below.

3,687,845

SEPARATING TRAMP OILS FROM OIL-IN-WATER EMULSIONS

Lyle G. Treat, Ferguson, Mo., and Porter Hart, Lake Jackson, Tex., assignors to The Dow Chemical Company, Midland, Mich.

No Drawing. Filed May 15, 1970, Ser. No. 37,840

Int. Cl. B01d *17/04*

U.S. Cl. 210—54 **7 Claims**

Accumulations of tramp oils are removed from oil-in-water emulsions utilized as cleaners, lubricants and coolants by introducing into the emulsion a small but effective amount of a high molecular weight, water-soluble anionic polymer and heating the treated emulsion at an elevated temperature whereby the tramp oils are coalesced and floated to the surface of the emulsion. The essentially continuous but distinct tramp oil and emulsion phases are then readily separated.

3,687,846

HIGH YIELD BENTONITES

William J. Lang, Libertyville, Ill., assignor to International Minerals & Chemical Corporation

No Drawing. Filed June 2, 1970, Ser. No. 42,889

Int. Cl. C10m *3/22*

U.S. Cl. 252—8.5 A **17 Claims**

The properties of bentonite are enhanced for use in aqueous suspensions by intimately mixing with the clay minor amounts of a water-soluble polymer containing carboxyl groups or salt thereof (e.g., a water-soluble polyacrylic acid or salt thereof) or a polymer on which car-

boxyl groups are formed in water, and a water-soluble polyalkylene oxide.

3,687,847

COMPOSITION AND PROCESS FOR INHIBITING CORROSION IN OIL WELLS

Jim Maddox, Jr., and William Schoen, Houston, Tex., assignors to Texaco Inc., New York, N.Y.

No Drawing. Continuation-in-part of application Ser. No. 649,822, June 29, 1967. This application Mar. 30, 1971, Ser. No. 129,594

Int. Cl. C23f *11/00, 11/14*

U.S. Cl. 252—8.55 E 4 Claims

Amide condensation products of polymeric acid and 1-aminoalkyl-2-alkyl-2-imidazoline for use in compositions of heavy liquid corrosion inhibitors which may contain weighting agents such as polyhydric alcohols and alkylene carbonates. Continuous or intermittent application of liquid coatings of these inhibitors on metals, particularly ferrous metals, in contact with sweet and sour petroliferous well fluids, form persistent films which afford effective protection against corrosion, even at elevated temperature, in brine or oil and brine mixtures.

3,687,848

LUBRICATING OIL COMPOSITIONS

Terence Colclough, Charlton Wantage, Arthur L. Morris, Didcot, and Robert J. Hodges, Weston-Super-Mare, England, assignors to Esso Research and Engineering Company

No Drawing. Filed July 13, 1970, Ser. No. 54,623

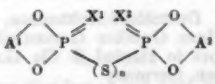
Claims priority, application Great Britain, July 18, 1969, 36,253/69

Int. Cl. C10m *1/48*

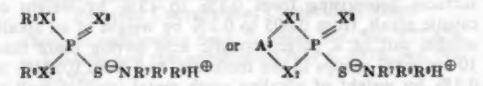
U.S. Cl. 252—32.7 E 2 Claims

A lubricating oil composition having as an antioxidant and antiwear additive a mixture of (1) of phosphorothionyl or phosphonyl sulphide of the formulae

or



where R^1, R^2, R^3 and R^4 are hydrocarbyl groups A^1 and A^2 are divalent hydrocarbon groups, X^1 and X^2 are oxygen or sulphur, and n is an integer of 1 to 4 and (2) an organic ammonium thiophosphate of the formulae



where R^5, R^6 and R^7 are hydrocarbyl groups, A^3 is a divalent hydrocarbon group, X^1, X^2 and X^3 are oxygen or sulphur, R^8 and R^9 are hydrogen or hydrocarbyl groups.

3,687,849

LUBRICANTS CONTAINING OIL-SOLUBLE GRAFT POLYMERS DERIVED FROM DEGRADED ETHYLENE-PROPYLENE INTERPOLYMERS

Franklin Paul Abbott, Brooklyn, Ohio, assignor to The Lubrizol Corporation, Wickliffe, Ohio

No Drawing. Continuation-in-part of application Ser. No. No. 737,838, June 18, 1968, and Ser. No. 76,247, Sept. 28, 1970. This application Jan. 18, 1971, Ser. No. 107,489

Int. Cl. C10m *1/36, 1/38*

U.S. Cl. 252—47.5 8 Claims

Graft polymers are prepared from various polymerizable unsaturated monomers and an oxidized, degraded interpolymer of ethylene and propylene. These polymers are useful as viscosity index improvers, dispersants and pour point depressants for fuels and lubricants.

3,687,850

HIGH TEMPERATURE INSULATING FIBER

Lawrence Vincent Gagin, Toledo, Ohio, assignor to Johns-Manville Corporation, New York, N.Y.

No Drawing. Filed Mar. 27, 1970, Ser. No. 23,442

Int. Cl. C03b *37/10;* C03c *3/30, 25/06*

U.S. Cl. 252—62 11 Claims

A glass fiber mass comprising long staple fibers having silica and alumina as the major constituents and which are substantially shot free, stable and resistant to devitrification at temperatures of about 2000 to 2300° F. The fibers are produced from base glasses and with techniques suitable for formation of long staple fibers and then subjected to treatments to alter their composition and structure for advantageous high temperature applications. The fibers are particularly suited for the manufacture of papers and felts.

3,687,851

MANUFACTURE OF HIGHLY COERCIVE CHROMIUM DIOXIDE

Hans Joerg Hartmann, 12 Im Sandgarten, 6706 Wachenheim, Germany; Karl Wilhelm Leonhard, 12 Robert-Koch-Strasse, 6712 Bobenheim, Germany; Manfred Ohlinger, 69 Sternstrasse, 6700 Ludwigshafen; Germany; and Matthias Schwarzmann, 54 Carl-Bosch-Strasse, 6703 Limburgerhof, Germany

No Drawing. Filed May 6, 1971, Ser. No. 141,003

Claims priority, application Germany, May 11, 1970, P 20 22 820.0

Int. Cl. C01g *37/02*

U.S. Cl. 252—62.51 4 Claims

A process for the manufacture of highly coercive chromium dioxide modified with at least two different foreign elements, one of which is selected from the group consisting of antimony, selenium and tellurium, is disclosed. The addition of acicular iron or acicular iron oxide produces a highly coercive chromium dioxide.

3,687,852

AUTOMATIC TRANSMISSION FLUID AND METHOD

Arthur William Godfrey, Fishkill, Peter Dorn, Lagrangeville, and Wheeler C. Crawford, Fishkill, N.Y., assignors to Texaco Inc., New York, N.Y.

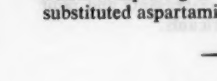
No Drawing. Filed Dec. 17, 1970, Ser. No. 99,284

Int. Cl. C09k *3/00;* C10m *1/32*

U.S. Cl. 252—77 8 Claims

Automatic transmission fluid composition comprising at least 86 weight percent of a mineral lubricating oil,

from 0.1 to 5 weight percent of an ashless dispersant and from 0.01 to 5 weight percent of a substituted aspartamide represented by the formula:



in which X and Y alternately represent hydrogen and the radical R'R''N—, R and R' each represent an aliphatic hydrocarbon radical having from about 1 to 30 carbon atoms, and R'' is hydrogen or an aliphatic hydrocarbon radical having from 1 to 30 carbon atoms and a method of operating an automatic transmission having friction sensitive power transmitting means on a composition comprising a mineral oil and the above-described substituted aspartamide.

3,687,853

GRANULATION PROCESS

Remigio Natali and Giuseppe Giombini, Rome, Italy, assignors to Colgate-Palmolive Company, New York, N.Y.

No Drawing. Filed June 2, 1970, Ser. No. 42,892

Claims priority, application Italy, June 6, 1969, 37,689

Int. Cl. C11d *7/42*

U.S. Cl. 252—89 **10 Claims**

A process for producing granular enzyme product containing enzyme, a water-soluble, hydratable, builder salt, such as sodium tripolyphosphate, and a water-soluble, nonionic surface active agent which comprises granulating the enzyme in particulate form and the hydratable builder salt in particulate form with a solution of a water-soluble nonionic surface active material in water, the water being present in at least sufficient amount to substantially completely hydrate the builder salt.

3,687,854

Patent Not Issued For This Number

3,687,855

SOLID IODOPHOR CLEANSING COMPOSITIONS

Alfred Halpern, Great Neck, N.Y., assignor to Synergistics, Inc., New York, N.Y.

No Drawing. Filed May 5, 1969, Ser. No. 822,002

Int. Cl. C11d *3/48*

U.S. Cl. 252—106 **31 Claims**

Solid iodine-containing germicidal cleansing compositions containing an iodophor, an extender substance polyoxyethylene glycol, a fatty alcohol of the formula ROH, wherein R is a saturated alkyl group of from 10 to 18 carbons in chain length and a detergent selected from the group consisting of the alkyl sulfo esters of the formula R—COO—CH_2—CH_2—SO_3—Na, sodium N-cyclohexyl - N - palmitoyltaurate, sodium N-alkyl acyl-N-methyltaurate said alkyl group being from 10–18 carbon atoms in chain length, and mixtures of these, which are manufactured into proper size and shape by either a hot-pour molding process, a cold stamping, or an extrusion process, and are stable, non-hygroscopic, to retain their germicidal properties for prolonged periods of time, for use to degerm biologic tissues as well as inanimate objects.

3,687,856

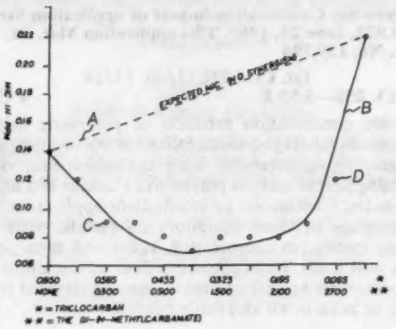
SYNERGISTIC ANTISEPTIC COMPOSITIONS

David Taber, Evanston, and Leo A. Raphaelian, Wilmette, Ill., assignors to Armour-Dial, Inc., Chicago, Ill.

Filed July 20, 1970, Ser. No. 56,271

Int. Cl. C11d *9/50*

U.S. Cl. 252—107 **6 Claims**



Compositions possessing antibacterial activity through the effect of synergistic mixtures of 2,2'-methylene-bis-(4, 6-dichlorophenol)-di-(N-methylcarbamate) and 4,4' - dichloro-3-trifluoromethyl carbanilide.

3,687,857

CORROSION INHIBITED PAINT REMOVER

Myer Rosenfeld, Baltimore, and Troy R. Nichols, Bel Air, Md., assignors to the United States of America as represented by the Secretary of the Army

No Drawing. Filed Dec. 1, 1969, Ser. No. 881,271

The portion of the term of the patent subsequent to Dec. 7, 1987, has been disclaimed

Int. Cl. C09d *9/04;* **C23f** *11/18*

U.S. Cl. 252—109 **6 Claims**

A paint remover composition comprising a soluble metasilicate in combination with a metal corrosion inhibitor consisting of sodium and potassium stannate.

3,687,858

PROCESS FOR CLEANING ALUMINUM

Roland Geisler, Dusseldorf-Holthausen, Georg Jansen, Neuss, and Hans Gunther Germscheid, Hosel, Germany, assignors to Henkel & Cie G.m.b.H., Dusseldorf-Holthausen, Germany

No Drawing. Filed July 23, 1969, Ser. No. 844,184

Claims priority, application Austria, Sept. 2, 1968, A 8,498/68

Int. Cl. C11d *7/06*

U.S. Cl. 252—156 **9 Claims**

An aqueous cleaning solution for cleaning aluminum surfaces comprising from 0.5% to 15% by weight of caustic alkali, from 0.005 to 0.2% by weight of an alkali-soluble salt of a polycarboxylic acid having more than 10 carboxyl groups in the molecule, and from 0.003% to 0.1% by weight of alkaline earth metal ions; as well as the process of cleaning aluminum surfaces which comprises treating the surfaces with the said aqueous cleaning solution at a temperature of from 50° C. to 85° C., rinsing and drying the cleaned surfaces.

3,687,859

CORROSION INHIBITING PROCESSES AND COMPOSITIONS OF ALIPHATIC AMINES AND DIQUATERNARY DIAMINES

Ronald M. Silverstein, Parsippany, N.J., assignor to Drew Chemical Corporation, New York, N.Y.

No Drawing. Continuation-in-part of abandoned application Ser. No. 666,480, Sept. 8, 1967. This application Feb. 9, 1971, Ser. No. 114,055

Int. Cl. C02b 5/06

U.S. Cl. 252—180 13 Claims

Improved compositions are described for inhibiting corrosion in systems using water as the heat transfer medium. The compositions are aqueous dispersions comprising an aliphatic long chain amine and from about 0.20 to about 1 part of N-phenyl (higher alkyl) lower alkyl quaternary diamine per part of the long chain aliphatic amine. The process of preparing the dispersion and its use to inhibit corrosion are also disclosed.

3,687,860

POLYMERIZABLE MIXTURES COMPRISING A HALOGENATED BIVALENT METAL SALT OF AN ACRYLATE- OR METHACRYLATE-PHTHALATE ESTER OF AN ALKYLENE GLYCOL

Hideaki Matsuda, Marugame, and Takanori Okamoto, Nakatoda, Japan, assignors to Okura Kogyo Kabushiki Kaisha, Takamatsu-shi, Kagawa-ken, Japan

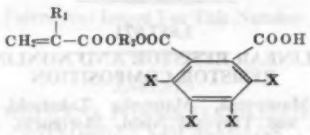
No Drawing. Filed Aug. 18, 1970, Ser. No. 64,809

Claims priority, application Japan, Nov. 6, 1969, 44/89,104

Int. Cl. C08d 3/14; C08f 3/66

U.S. Cl. 252—188.3 11 Claims

A polymerizable substance is prepared by first making a bivalent metal salt of a compound having the structural formula



wherein R_1 is hydrogen or methyl, R_2 is an alkylene group which may or may not be halogenated and X is halogen, and then mixing said salt with another monomer capable of copolymerization with it. The polymerizable substance so obtained can be used in paints or as a molding material or adhesive.

3,687,861

Patent Not Issued For This Number

3,687,862

PLASTIC OPTICAL ELEMENTS

Stanley Morton Bloom, Waban, Mass., assignor to Polaroid Corporation, Cambridge, Mass.

Original application Sept. 2, 1966, Ser. No. 577,576. Divided and this application July 6, 1970, Ser. No. 60,982

Int. Cl. F21v 9/00; G02b 13/14

U.S. Cl. 252—300 5 Claims

An element for filtering infrared light useful for example, as an optical lens. A metal complex is advantageously employed as an infrared absorber in elements of the type described. The infrared absorbers can be represented by the following formula:

where Me is a metal of the first, second or third transition metal series which will provide a complex that is an effective infrared absorber and which is effectively transparent to light in the visible region of the spectrum and each R is selected from the group consisting of hydrogen, alkyl, aromatic, heterocyclic, nuclearly substituted aro(matic rings and nuclearly substituted heterocyclic rings.

3,687,863

OPTICAL FILTERS CONTAINING TETRAPHENYLPORPHINS AND METHOD OF MAKING SAME

Paul Wacher, Bayside, N.Y., assignor to General Telephone & Electronics Laboratories, Incorporated

Filed May 25, 1970, Ser. No. 41,133

The portion of the term of the patent subsequent to Jan. 25, 1989, has been disclaimed

Int. Cl. G02b 5/70

U.S. Cl. 252—300 12 Claims

Selective optical absorption filters are disclosed which consist of polymeric matrices containing metal derivatives of porphin. In a preferred embodiment of the invention the polymeric matrix is an acrylic ester polymer and it contains at least one metal derivative of tetraphenylporphin.

3,687,864

Patent Not Issued For This Number

3,687,865

OIL CONTAINING MICROCAPSULES AND METHOD FOR THEIR PRODUCTION

Shizuo Katayama and Hiroharu Matsukawa, Fujimiyashi, Masaya Yamamoto, Tokyo, and Junichi Matsuyama, Kanagawa, Japan, assignors to Fuji Photo Film Co., Ltd., Kanagawa, Japan

No Drawing. Filed Aug. 4, 1969, Ser. No. 848,411

Claims priority, application Japan, Aug. 3, 1968, 43/55,014; Sept. 13, 1968, 43/65,939; Sept. 17, 1968, 43/67,130; Apr. 25, 1969, 44/32,221, 44/32,222; May 10, 1969, 44/35,900, 44/35,901

Int. Cl. B01j 13/02; B44d 1/44

U.S. Cl. 252—316 31 Claims

Method of producing microcapsules containing hydrophobic oily liquid, which comprises, in producing microcapsules by complex coacervation, using gelatin, as at least one hydrophilic colloid, adding an aqueous solution of shock preventing agent at a temperature lower than the gelling point of gelatin in order to prevent a rise in viscosity due to reaction of gelatin and aldehyde during hardening pretreatment and rapidly accomplishing hardening pretreatment.

3,687,866

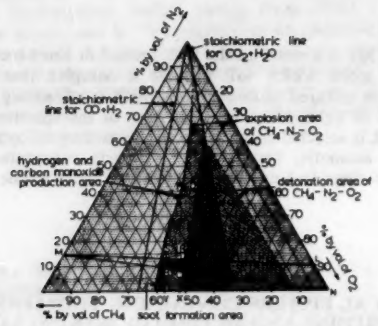
PROCESS OF PREPARING SYNTHESIS GAS

Constant P. M. Sadée, Brunssum, and Henricus A. A. Koenders, Geleen, Netherlands, assignors to Stamicarbon N.V., Heerlen, Netherlands

Filed July 30, 1970, Ser. No. 59,390

Int. Cl. C01b 2/14; F02b 75/12

U.S. Cl. 252—373 2 Claims


% by vol. of N_2
stoichiometric line for CO_2+H_2O
stoichiometric line for $CO+H_2$
explosion area of $CH_4-N_2-O_2$
hydrogen and carbon monoxide production area
detonation area of $CH_4-N_2-O_2$
% by vol. of O_2
% by vol. of CH_4
soot formation area

A method for the production of carbon monoxide and hydrogen by the incomplete combustion of methane with oxygen and optionally in the presence of nitrogen is disclosed. The combustion is conducted in an internal engine supplied with a mixture of the three gases, preferably within the proportions of ABCD of FIG. 1.

3,687,867

NOVEL CO-INITIATOR SYSTEMS

Roger N. Lewis, Pinole, and Ronald L. Friedman, San Rafael, Calif., assignors to Argus Chemical Corporation, Brooklyn, N.Y.

No Drawing. Filed Apr. 8, 1970, Ser. No. 26,768

The portion of the term of the patent subsequent to Nov. 30, 1988, has been disclaimed

Int. Cl. C08f 3/22

U.S. Cl. 252—426 13 Claims

The combination of tertiary alkyl peresters of tertiary hydroperoxides and either organic azo compounds containing the monovalent —CN radical or diacyl peroxides useful as polymerization initiators. These co-initiator systems are particularly efficient in the polymerization of certain vinyl monomers such as vinyl chloride.

3,687,868

IMPREGNATION WITH TIN FOR STRONG OXIDATIVE DEHYDROGENATION CATALYSTS

Emory W. Pitzer, Bartlesville, Okla., assignor to Phillips Petroleum Company

No Drawing. Filed June 22, 1970, Ser. No. 48,543

Int. Cl. B01j 11/82

U.S. Cl. 252—435 5 Claims

A tin/phosphorus/Group *Ia* or II*a* oxidative dehydrogenation catalyst, subsequent to heating, is impregnated with additional tin and then is heated to improve the physical integrity of the catalyst.

3,687,869

HYDROCRACKING CATALYST

Albert L. Hensley, Jr., Munster, Ind., assignor to Standard Oil Company, Chicago, Ill.

No Drawing. Filed Apr. 9, 1969, Ser. No. 814,858

Int. Cl. B01j 11/40

U.S. Cl. 252—455 Z 9 Claims

This invention concerns a hydrocracking catalyst including an ultrastable molecular sieve impregnated with a platinum series metal. The sieve is characterized by (a) a maximum cubic cell dimension of about 24.55 A., (b) hydroxyl infrared adsorption bands at or near 3700 $cm.^{-1}$ and 3625 $cm.^{-1}$, and (c) an alkali metal content of less than about 1 weight percent. This impregnated sieve is dispersed in a silica-alumina matrix, and the sieve-matrix mix is impregnated with an oxide of a metal, sulfide of a metal, or a metal in Group VI or VIII of the Periodic Table other than the platinum series metals.

3,687,870

DETERGENT COMPOSITIONS

Thaddeus M. Muzyczko, Melrose Park, Samuel Shore, Roselle, and Jon A. Loboda, Chicago, Ill., assignors to The Richardson Company, Melrose Park, Ill.

No Drawing. Filed Mar. 13, 1969, Ser. No. 807,119

Int. Cl. C11d 1/40, 1/62, 1/65

U.S. Cl. 252—545 9 Claims

This invention is directed to detergent compositions containing arylsulfonamidoamines, their salts or mixture thereof. Illustrative of this class of compounds is the hydroxyethyl chloride salt of N-dodecylbenzenesulfonamidopropyl-N,N-dimethylamine. In addition to properties descriptive of cationic detergents, these compounds exhibit remarkable compatibility with alkylaryl sulfonates and other anionic detergents.

3,687,871

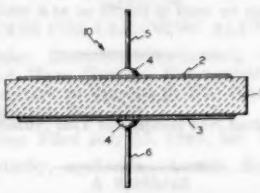
NONLINEAR RESISTOR AND NONLINEAR RESISTOR COMPOSITION

Takeshi Masuyama, Matsuoka Takatsuki, Hirakata Michio, and Tsuyoshi Nishi, Moriguchi, Japan, assignors to Matsushita Electric Industrial Co., Ltd., Kadoma, Osaka, Japan

Filed July 24, 1970, Ser. No. 57,977

Int. Cl. H01b 1/06

U.S. Cl. 252—518 12 Claims



A resistor composition having a nonlinear voltage characteristic consisting essentially of zinc oxide and, as an additive bismuth fluoride, and a nonlinear resistor made from said composition. The resistor composition and the resistor have the electrical properties thereof further improved by the addition of at least one member selected from the group consisting of cobalt fluoride, manganese fluoride, stannous fluoride, nickel fluoride, chromium fluoride, bismuth oxide, cobalt oxide, and manganese oxide.

3,687,872

BOROSILICONE MATERIALS AND EPOXY RESINS CURED THEREWITH

Mark Markovitz, Schenectady, N.Y., assignor to General Electric Company

No Drawing. Original application Dec. 20, 1966, Ser. No. 603,122. Divided and this application Mar. 17, 1970, Ser. No. 24,968

Int. Cl. C08g *30/10*

U.S. Cl. 260—2 EC 5 Claims

New liquid reaction products of alkoxy functional organo-silicone material and boric acid material are used to cure epoxy resins producing clear materials having low dissipation factor, good corona resistance and other desirable properties.

3,687,873

METHOD FOR RECLAMATION OF MULTI-COMPONENT MIXTURES OF WASTE THERMOPLASTIC MATERIALS

Earle L. Kropscott, Midland, Mich., Robert R. Blanchard, Port Allen, La., and James N. Schramm, Baton Rouge, La., assignors to The Dow Chemical Company, Midland, Mich.

No Drawing. Filed Oct. 26, 1970, Ser. No. 84,149

Int. Cl. C08f *47/24*

U.S. Cl. 260—2.3 2 Claims

A method of reclamation of mixtures of waste thermoplastic materials into compatible blends of improved properties comprising preparing a fusion blend of such materials with from about 15 to 35 weight percent of certain chlorinated olefin polymers.

3,687,874

Patent Not Issued For This Number

3,687,875

POLYURETHANE FOAMS STABILIZED WITH 5-HYDROXY COUMARANS

Roland Nast, Cologne-Buchheim, Manfred Dahm and Kurt Ley, Leverkusen, and Rudiger Schubart, Cologne-Ehrenfeld, Germany, assignors to Farbenfabriken Bayer Aktiengesellschaft, Leverkusen, Germany

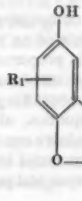
No Drawing. Filed Sept. 4, 1970, Ser. No. 69,943

Claims priority, application Germany, Sept. 9, 1969, P 19 45 475.2

Int. Cl. C08g *22/44, 51/58*

U.S. Cl. 260—2.5 BB 8 Claims

A process is provided for the production of polyurethane foams from polyisocyanates, organic compounds which contain at least two hydrogen atoms reactive with NCO groups, blowing agents, catalysts, substances which prevent discoloration in the core of the foam and, if desired, other additives, characterized in that the substances used for preventing discoloration in the core are 5-hydroxy-coumarans of the general formula:



in which

R_1 is a hydrogen atom or an alkyl radical, a cyclolakyl radical or an aralkyl radical containing one to nine carbon atoms, R_1 being in 6- or 7-position,

R_2 and R_3 may be the same or different alkyl groups containing one to six carbon atoms or R_2 and R_3 taken together may form a 5-membered, 6-membered or 7-membered ring which, in addition to the nitrogen atom, may contain an oxygen or another nitrogen atom,

R_4 and R_5 may be the same or different alkyl groups containing one to six carbon atoms or R_4 and R_5 taken together may form a carbocyclic 6-membered ring which may be sustituted with 1–5 alkyl groups with 1–4 C-atoms and which ring may contain a carbon to carbon double bond.

3,687,876

POLYURETHANE FOAMS STABILIZED WITH 6-HYDROXY CHROMANS

Roland Nast, Cologne-Buchheim, Manfred Dahm, Bergisch-Neukirchen, and Kurl Ley, Leverkusen, Germany, assignors to Farbenfabriken Bayer Aktiengesellschaft, Leverkusen, Germany

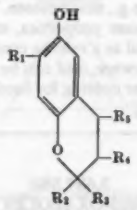
No Drawing. Filed Sept. 4, 1970, Ser. No. 69,944

Claims priority, application Germany, Sept. 6, 1969, P 19 45 212.1

Int. Cl. C08g *22/44, 51/58*

U.S. Cl. 260—2.5 BB 6 Claims

A process is provided for the production of polyurethane foams from polyisocyanates, organic compounds which contain at least two active hydrogen atoms, blowing agents, catalysts, substances which prevent discoloration in the core of the foam and, if desired, other additives, wherein discoloration preventative is a 6-hydroxy-chroman of the general formula:



in which R_1 is hydrogen, an alkyl radical, a cycloalkyl radical or an aralkyl radical containing from one to 9 carbon atoms, and R_2, R_3, R_4 and R_5 are the same or different hydrogen or lower alkyl group having from one to 4 carbon atoms.

3,687,877

METHOD OF PRODUCING MOLDED ARTICLES FROM COFFEE BEAN HULLS

Leslie A. Runton, Canton, Mass., assignor to Industria de Cascarillas—CISCANA S.A., Medellin, Colombia, South America

No Drawing. Filed Apr. 29, 1970, Ser. No. 33,049

Int. Cl. B32b *5/16;* C08g *51/14*

U.S. Cl. 260—17.2 6 Claims

The method of making a molded product from coffee bean and rice hulls in which the hulls are coated with a phenol formaldehyde resin, cold molded into a preform and then molded under heat and pressure to form a heat set cured product.

3,687,878

PROCESS FOR PREPARING A GRAFT-COPOLYMERIZED CELLULOSE

Minoru Imoto, 3-46, Oka-Minamicho, Hirakate-shi; Kiichi Takemoto, 32, Sumie-Nishi-3-chome, Sumiyoshi-ku, Osaka, and Ching yun Huang, 607, Sakuragaoka, Minoo-shi, all of Japan

Continuation-in-part of Ser. No. 636,252, May 5, 1967, abandoned. This application Dec. 1, 1969, Ser. No. 881,329

Int. Cl. C08b *15/00*

U.S. Cl. 260—17.4 GC 7 Claims

A process for the graft-copolymerization of at least one vinyl monomer on a cellulose, which comprises heating a system consisting of a fibrous cellulose of wood, pulp, cotton, hemp or the like, at least one vinyl monomer such as, for typical example, methyl methacrylate, ethyl methacrylate, methacrylic acid, acrylonitrile, styrene or the like and water, the amount of water being at least 30 times the weight of the cellulose used, in the form of a heterogeneous system, under atmospheric or elevated pressure at a temperature from room temperature to the boiling point of water, in the absence of polymerization initiator and emulsifying agent. This copolymer is formed to semitransparent paper or film-like material by hot press.

3,687,879

COATING COMPOSITION OF AN EPOXY RESIN, AN AROMATIC SULFONAMIDE, A SILICONE RESIN AND A CROSS-LINKING CATALYST

Joseph A. Vasta, Woodbury, N.J., assignor to E. I. du Pont de Nemours and Company, Wilmington, Del.

Filed Dec. 16, 1970, Ser. No. 98,851

Int. Cl. C08g *45/16*

U.S. Cl. 260—18 EP 10 Claims

The novel coating composition is a mixture of a low molecular weight epoxy resin, an aromatic sulfonamide, e.g., N-cyclohexyltoluene sulfonamide, a reactive silicone resin and a cross-linking catalyst, e.g., zinc octoate. The coating composition has excellent release properties, stain resistance, water repellency, and is useful as a release coating for icecube trays, for bakeware and cookware, and can be utilized to coat sinks, oven parts and as a clear coating for hardware.

3,687,880

BIS-OXAZOLES

Adolf Emil Siegrist, Weissensteinstrasse 37, Basel; Erwin Maeder, Eichbergweg 14, Aesch/Basel-Land; Peter Liechti, Hauptstrasse 121, Binningen, and Leonardo Guglielmetti, Dufourstrasse 42, Basel, all of Switzerland

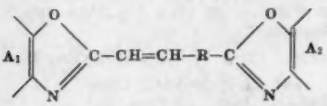
Filed Aug. 24, 1964, Ser. No. 391,781

Claims priority, application Switzerland, Aug. 29, 1963, 10664/63

Int. Cl. C07d *85/48;* C09b *23/14*

U.S. Cl. 260—240 D 4 Claims

The invention concerns novel bis-azoles of the general formula



wherein R is a para-phenylene radical which may be substituted and A_1 and A_2 are benzo radicals which may be substituted.

3,687,881

ZINC-CONTAINING POLYMER COMPOSITIONS

Edward L. Bowman, Bartlesville, Okla., assignor to Phillips Petroleum Company

Filed Aug. 3, 1970, Ser. No. 60,651

Int. Cl. C08c *11/04;* C08d *11/04*

U.S. Cl. 260—23.7 M 6 Claims

Zinc dust is added to rubbers, both natural and synthetic, to promote resistance of the rubbers to aging and reversion.

3,687,882

SILANE-TITANATE DISPERSIONS FOR COATING ALUMINUM

Ernest M. Bishop, Livermore, Calif., assignor to Nexcel Corporation, Dublin, Calif.

Filed April 29, 1971, Ser. No. 138,793

Int. Cl. B32b *15/08;* C08g *31/24;* C09d *3/84*

U.S. Cl. 260—29.2 M 10 Claims

Composition and method are provided for enhancing adhesive bonding to an aluminum surface and protecting the aluminum surface from corrosive and other chemical degradation. The improved bonding surface comprises a composition derived from cohydrolysis of a diamino-substituted silane and a titanate. The corrosion resistant composition is derived from a cohydrolysed composition of an oxysubstituted silane and a titanate, combined with hexavalent chromium. The compositions may be applied by any convenient means in a liquid media to the aluminum surface, preferably cleaned prior to application of the above compositions.

3,687,883

WATER EXTENDED POLYESTER RESIN

Christiaan Korf, Haarlem, Netherlands, assignor to Woods Research and Development Corporation, Oklahoma City, Okla.

Filed July 6, 1970, Ser. No. 52,738

Int. Cl. C08f *43/02*

U.S. Cl. 260—29.6 NR 40 Claims

A solid water extended polyester resin is formed by esterifying a polycarboxylic acid with a polyol, adding a cross-linking agent, forming a water in oil emulsion stabilized by an emulsifying agent, and thereafter polymerizing the resin. The emulsifying agent is ammonium carbonate-carmabate.

3,687,884

ALKALI-SWELLABLE POLYVINYL ACETATE GRAFTED LATEXES COMPRISING VINYL ACETATE, AN ALIPHATIC ESTER OF AN UNSATURATED MONOCARBOXYLIC ACID STYRENE, AND AN UNSATURATED MONOCARBOXYLIC ACID

Denis K. Huang, Laurel, Md., assignor to Westvaco Corporation, New York, N.Y.

Filed Aug. 3, 1970, Ser. No. 60,761

Int. Cl. C09d *3/74*

U.S. Cl. 260—29.6 RW 17 Claims

A synthetic polymeric latex comprising a major amount of vinyl acetate and minor amounts of an acrylic ester, at least one acrylic acid, and styrene is prepared by copolymerizing vinyl acetate with the acrylic ester and acid, to form a backbone polymer, and then grafting styrene onto the backbone polymer. Stable, aqueous, alkali-swellable emulsions of the synthetic polymeric latex can be prepared, and the latex can be used as a binder material in paper coating compositions to bind pigments to paper and paperboard.

3,687,885

WATER BASE PAINTS HAVING AN IMPROVED BALANCE OF ANTI-DRIP AND LEVELING QUALITIES

Murray S. Abriss, Havertown, and Maurice J. McDowell, Media, both of Pa., assignors to E. I. duPont de Nemours and Company, Wilmington, Del.

Filed April 15, 1970, Ser. No. 28,925
Int. Cl. C08f *37/18*
U.S. Cl. 260—29.6 WB 18 Claims

A coating composition comprising:

[A] an aqueous dispersion of a polymer of ethylenically unsaturated monomers;
[B] finely divided hydrous silicate;
[C] non-ionic surfactant; and
[D] non-cellulosic thickener.

3,687,886

PRODUCTION OF POLYMERS HAVING BETAINE GROUPS CONTAINING SULFUR ATOMS

Harry Distler, Ludwigshafen; Rudi Widder, Eppelheim; Bernd Stanger, Ludwigshafen; Alfred Mueller, Ludwigshafen, and Wolfgang Druschke, Frankenthal, all of Germany, assignors to Badische Anilin- & Soda-Fabrik Aktiengesellschaft, Rhineland-Pfalz, Germany

Filed Sept. 8, 1970, Ser. No. 70,545
Claims priority, application Germany, Sept. 20, 1960, P 19 47 788.4
Int. Cl. C08f *15/40*
U.S. Cl. 260—29.6 TA 7 Claims

New homopolymers and copolymers and their solutions or dispersions having numerous applications are prepared by homopolymerization or copolymerization of olefinically unsaturated sulfitobetaines in bulk, suspension, solution or emulsion.

3,687,887

PHOTOGRAPHIC FILM TITLING INK

Daniel M. Zabiak, River Grove, Ill., assignor to A. B. Dick Company, Niles, Ill.

Filed July 20, 1970, Ser. No. 56,708
Int. Cl. C08f *29/42, 41/02, 41/12*
U.S. Cl. 260—29.6 WB 9 Claims

A jet printing ink composition having application onto a film base, as in the titling of film or photographic negatives with alphanumeric or other characters in which the ink composition is an aqueous system containing 1–5 percent by weight of a dissolved styrene-maleic anhydride resin, 3–20 percent by weight of glycol ethers and up to 4 percent by weight carbon black in suspension or 1–4 percent orthochromatic dyes in solution, or both, plus additives such as tinting dyes.

3,687,888

TERPOLYMER LATEX EMULSIONS

John A. Frump, and Harry F. Kruse, both of Terre Haute, Ind., assignors to Commercial Solvents Corporation, New York, N.Y.

Filed Oct. 30, 1969, Ser. No. 872,762
Int. Cl. C08f *1/13, 27/08*
U.S. Cl. 260—29.7 N 9 Claims

A terpolymer of styrene, butadiene, and a vinyl oxazoline or vinyl oxazoline ester in aqueous emulsion form, useful for the preparation of paper coatings.

3,687,889

PROCESS FOR PREPARING OIL-EXTENDING RUBBER

Josef Witte, Cologne, Stammheim; Friedrich Haas, Cologne, Buchheim, and Gunter Marwede, Leverkusen, all of Germany, assignors to Farbenfabriken Bayer Aktiengesellschaft, Leverkusen, Germany

Filed July 22, 1969, Ser. No. 843,807
Claims priority, application Germany, Aug. 6, 1968, P 17 95 068.4
Int. Cl. C08c *11/22*; B01j *11/84*
U.S. Cl. 260—30.6 R 8 Claims

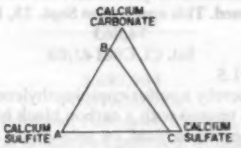
An oil-extended polyisoprene composition which comprises a. 100 parts by weight of a synthetic cis-1,4-polyisoprene which has been prepared by polymerizing isoprene in solution in a hydrocarbon with an organometallic mixed catalyst of titanium tetrachloride, an aluminum trialkyl and/or an aluminum trialkyl etherate and stopping the polymer solution containing the mixed catalyst with an aliphatic or cycloaliphatic diamine or polyamine and an aliphatic or cycloaliphatic secondary amine containing at least 10 carbon atoms, optionally in admixture with a lower aliphatic alcohol, followed by stabilization with a conventional anti-ager, and b. from 15 to 50 parts by weight of a rubber extending oil and a process for producing said mixture.

3,687,890

THERMOPLASTIC RESINOUS COMPOSITION

Rinnosuke Susuki, Tokyo; Hiroshi Hoshi, Chiba; Jiro Saito, Tokyo; Keiichi Murakami, Miyagi, and Michio Hirakawa, Chiba, all of Japan, assignors to Lion Fat & Oil Co., Ltd., Tokyo, Japan

Filed April 8, 1971, Ser. No. 132,419
Claims priority, application Japan, April 25, 1970, 45/35747
Int. Cl. C08f *45/04*; C08k *1/02*
U.S. Cl. 260—41 R 2 Claims



A thermoplastic resinous composition comprising a thermoplastic resin and mixed therewith at least two fillers selected from the group consisting of calcium sulfite, calcium sulfate and calcium carbonate (excepting a mixture system of calcium sulfite and calcium sulfate), the respective amount of the filler being, as shown in the drawing, within the range surrounded by the point A (100 percent by weight of calcium sulfite, 0 percent by weight of calcium carbonate and 0 percent by weight of calcium sulfate), the point B (20 percent by weight of calcium sulfite and 80 percent by weight of calcium carbonate) and the point C (10 percent by weight of calcium sulfite and 90 percent by weight of calcium sulfate).

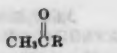
3,687,891

TEXTILE TREATING AGENTS AND METHODS OF PREPARING SAME

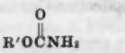
Giuliana C. Tesoro, Dobbs Ferry, N.Y., assignor to J. P. Stevens & Co., Inc., New York, N.Y.

Division of Ser. No. 507,649, Nov. 15, 1965, Pat. No. 3,503,701. This application Jan. 30, 1969, Ser. No. 835,272
Int. Cl. C07c *125/06*
U.S. Cl. 260—482 C 18 Claims

This invention relates to a process for preparing novel condensation products which comprises the step of reacting formaldehyde with a ketone, having the formula



where R is alkyl, and an alkyl carbamate having the formula



where R′ is selected from the group consisting of a substituted and unsubstituted alkyl having from 1 to 6 carbon atoms under alkaline conditions, and to novel textile treating agents made by said process.

3,687,892

ALKYLTHIOALKANOYLAMINOPHENOL ANTIOXIDANTS FOR ORGANIC MATERIAL

Martin Dexter, Briarcliff Manor, and Martin Knell, Ossining, both of N.Y., assignors to Ciba-Geigy Corporation

Division of Ser. No. 803,456, Feb. 28, 1969, Pat. No. 3,590,083. This application Aug. 20, 1970, Ser. No. 65,693

Int. Cl. C08f *45/60*

U.S. Cl. 260—45.9 R **6 Claims**

Novel alkylthioalkanoylaminophenol compounds are provided by a procedure involving the reaction of an alkylaminophenol and an alkylthioalkanoyl chloride. The alkylthioalkanoylaminophenols are useful as stabilizers of organic materials which are subject to oxidative deterioration.

3,687,893

RUBBER COMPOUNDING

Barry Topcik, Somerville, N.J., assignor to Columbian Carbon Company, New York, N.Y.

Continuation of Ser. No. 738,417, June 20, 1968, abandoned, which is a continuation-in-part of Ser. No. 468,151, June 29, 1965, abandoned. This application Sept. 23, 1970, Ser. No. 74,863

Int. Cl. C08f *45/08*

U.S. Cl. 260—41.5 **6 Claims**

A process whereby a sulfur-curable ethylene-propylene terpolymer is heat treated with a carbon black having a halogen chemisorbed thereon to yield, on subsequent vulcanization, a vulcanizate having increased tensile and rebound, reduced hysteretic properties, and improved tear strength and electrical resistivity. After compounding the ethylene-propylene terpolymer and the halogenated black, heat treatment may be carried out with simultaneous mastication in a heated Banbury or on a heated roll mill, or alternatively the masterbatch may be heated without mastication, e.g., in a rubber press. The heat treatment is carried out in the absence of curatives.

3,687,894

A COMPOSITION OF A LIQUID EPOXY RESIN, A POLYHYDROXYL MATERIAL AND A HARDENER

William G. Collings, 38 Greentwig Dr.; Anthony N. Cianciarulo, 61 Shady Nook Dr., both of Toms River, N.J., and Kwan-Tin Shen, 1212 Tuxedo Terrace, Lakewood, N.J.

Filed July 23, 1970, Ser. No. 57,764

Int. Cl. C08g *30/14*

U.S. Cl. 260—47 EC **10 Claims**

Novel compositions and methods are presented for one step simultaneous advancement and B staging or curing of liquid epoxy resins. The methods involve forming a composition of the liquid epoxy resin, a hydroxyl containing material reactable therewith at elevated temperatures and a hardener therefor guanidine or its derivatives, applying the mixture to a suitable substrate and subjecting the composite to elevated temperatures. The compositions are useful for impregnation of substrates such as fiber glass for the production of laminates.

3,687,895

POLYMERS FROM UNSATURATED CARBONATE ESTERS OF PHENOLIC COMPOUNDS

Hugo Vernaleken; Georg Malamet, both of Krefeld; Ludwig Bottenbruch, Krefeld-Verdingen; Heinrich Krimm, Krefeld-Verdingen, and Hermann Schnell, Krefeld-Verdingen, all of Germany, assignors to Farbenfabriken Bayer Aktiengesellschaft, Leverkusen, Germany

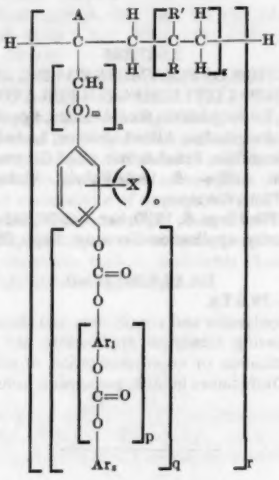
Continuation-in-part of Ser. No. 813,316, April 3, 1969, abandoned. This application Oct. 26, 1970, Ser. No. 84,214

Claims priority, application Germany, April 3, 1969, P 17 70 144.9

Int. Cl. C08f *15/02*

U.S. Cl. 260—47 UA **8 Claims**

The new polymeric compounds corresponding to the statistical formula



wherein A is hydrogen or a methyl group, X is halogen or a methyl group, Ar_1 is a bivalent aromatic radical which may or may not contain substitutents on the nucleus, Ar_2 is a monovalent aromatic radical which may or may not be substituted on the nucleus or it may be the same as Ar_1 but having an -OH group attached to one of the arylene valences; m is 0 or 1; n is 0 or 1; o is 0, 1 or 2; p is an integer of from about 5 to about 100; q is 1 or 2; r is an integer of from about 5 to about 1,000; g is a number of from about 5 to about 200; R′ is hydrogen or a methyl group; R is hydrogen, halogen, lower alkyl, ayrl, a carboxylic acid or a ester group of a monohydric alcohol, the amide or nitrile group, an ester group of a monocarboxylic acid or an alkoxy group, are the subjects of this application.

3,687,896

PROCESS FOR THE CONTINUOUS MANUFACTURE OF PHENOL RESINS OF THE NOVOLAK TYPE

Silvio Vargiu; Ugo Nistri, both of Milan, and Silvestro Pezzoli, Biassono, Milan, all of Italy, assignors to Societa Italiana Resine S.P.A.

Filed Nov. 20, 1970, Ser. No. 91,574

Claims priority, application Italy, Dec. 23, 1969, 26198 A/69

Int. Cl. C08g *5/06*

U.S. Cl. 260—57 A **7 Claims**

Phenol novolak resins of improved quality are made in elongated vertical reactors under particular reaction conditions, with agitation effected primarily in a direction at right angles to the vertical axis of the reactor.

3,687,897

PREPARATION OF OXAZOLIDINONES BY REACTING AN ISOCYANATE, OR ISOTHIOCYANATE WITH AN EPOXIDE IN THE PRESENCE OF A PHOSPHONIUM HALIDE ACID, ESTER, OR ACID ESTER OF THE ELEMENT C

James A. Clarke, 120 Blossom, Lake Jackson, Tex., assignor to the Dow Chemical Company, Midland, Mich.

Filed June 22, 1970, Ser. No. 48,524
Int. Cl. C08g *30/06*
U.S. Cl. 260—59 10 Claims

Oxazolidinones are prepared by reacting an organic isocyanate such as toluene diisocyanate with a vicinal epoxide such as the diglycidyl ether of p,p'-isopropylidine diphenol in the presence of a phosphonium catalyst such as tetrabutyl phosphonium bromide. The oxazolidinone compounds prepared herein are known to be useful as chemical intermediates and in the manufacture of resins and plastics.

3,687,898

PROCESS FOR THE PRODUCTION OF HEAT RESISTANT OXYMETHYLENE POLYMER

Takami Ishii, Ichihara; Shotaro Sugiura, Chiba, and Naohisa Takikawa, Ichihara, all of Japan, assignors to Ube Industries, Ltd., Tamaguchi-ken, Japan

Filed May 27, 1970, Ser. No. 40,907
Claims priority, application Netherlands, June 4, 1969, 6908497
Int. Cl. C08g *1/24, 1/26*
U.S. Cl. 260—67 FP 3 Claims

A process for producing a heat-resistant polymer consisting predominantly of oxymethylene repeating units, said process comprising submitting a high-molecular-weight polymer consisting predominantly of oxymethylene repeating units to the action concurrently of

a. a capping agent selected from the group consisting of acid anhydrides, oxyalkylene kiesters and linear oxyalkylene diethers, and
b. a Lewis acid.

3,687,899

PROCESS FOR POLYMERIZING GASEOUS FORMALDEHYDE

Jacob Ackermann; Franco Ferre, and Tetaz Felice, all of Milan, Italy, assignors to Societa Italiana Resine S.P.A.

Continuation of Ser. No. 723,471, April 23, 1968, abandoned. This application April 20, 1971, Ser. No. 135,748
Claims priority, application Italy, April 29, 1967, 15533 A/67
Int. Cl. C08g *1/02*
U.S. Cl. 260—67 FP 11 Claims

A process for continuous suspension polymerization of gaseous formaldehyde is provided, wherein build-up of solid polymer on the reactor walls and stirrer is prevented by the use of a flexible stirrer, conveniently a chain of suitable size, which keeps itself clean and by impinging on the walls of the reactor under centrifugal force keeps them clean also.

3,687,900

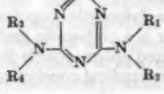
HOMOPOLYMERS OF SUBSTITUTED GUANAMINES

Philip Lee Bartlett, Wilmington, Del., assignor to E. I. du Pont de Nemours and Company, Wilmington, Del.

Division of Ser. No. 734,546, June 5, 1968, Pat. No. 3,536,710. This application July 1, 1970, Ser. No. 51,725
Int. Cl. C08g *9/28*
U.S. Cl. 260—67.6 C 2 Claims

Compounds of the formula

$$F[CF(CF_3)CF_2O]_nCF(CF_3)$$



wherein R_1, R_2, R_3 and R_4 are each selected from the group consisting of hydrogen or methylol ($-CH_2OH$), and n is an integer of 1 through 45, and polymers thereof.

3,687,901

Patent Not Issued For This Number

3,687,902

POLYUREAS OBTAINED BY REACTING TOLUENE DIISOCYANATE WITH AB,B-BIS(ALKYLAMINO)DIETHYLSULFONE

Albert C. Perrino, 2579 Cranston St., Cranston, R.I., and Michael G. Israel, 2928 Pawtucket Ave., East Providence, R.I.

Division of Ser. No. 720,384, April 10, 1968, Pat. No. 3,576,879. This application June 1, 1970, Ser. No. 62,120
Int. Cl. C08g *22/02*
U.S. Cl. 260—77.5 CH 1 Claim

β,β'-bis(alkylamino) diethyl sulfones and polyamides and polyureas obtained therefrom.

3,687,903

SYNTHETIC POLYMERS FROM SULFO-BIS(AMINOALKYL)FLUORENE

John Ewart Lodge, ICI Fibres Limited, Pontypool, England

Division of Ser. No. 702,784, Feb. 5, 1968. This application July 7, 1970, Ser. No. 60,999
Claims priority, application Great Britain, Feb. 13, 1967, 6,767/67
Int. Cl. C08g *20/20*
U.S. Cl. 260—78 R 8 Claims

Polyamides containing sulphofluorene links to accept basic dyestuffs (not acid) for single stage pattern dyeing.

3,687,904

POLYAMIDES

Ronald David Middleton, Pontypool, England, assignor to Imperial Chemical Industries Limited, 3, Millbank, England

Continuation of Ser. No. 726,219, May 2, 1968, abandoned. This application Dec. 4, 1970, Ser. No. 95,327
Int. Cl. C08g *20/20*
U.S. Cl. 260—78 R 5 Claims

Deep dye polyamides prepared from thermally stable polymers, e.g., 6 or 6.8 nylon, using excess base stabilizer in the presence of a chain branching agent.

3,687,905

REACTION PRODUCT OF CARBOXYLIC ACID WITH DEGRADED ETHYLENE-PROPYLENE INTERPOLYMER

Casper J. Dorer, Lyndhurst, Ohio, assignor to The Lubrizol Corporation, Wickliffe, Ohio

Division of Ser. No. 737,860, June 18, 1968, which is a continuation-in-part of Ser. No. 569,085, Aug. 1, 1966, abandoned, which is a division of Ser. No. 416,618, Dec. 7, 1964, Pat. No. 3,316,177. This application March 16, 1970, Ser. No. 24,447
Int. Cl. C08f *17/08*
U.S. Cl. 260—78.4 D 11 Claims

An oxidized, degraded interpolymer of ethylene and propylene is reacted with an unsaturated acid or derivative thereof, preferably maleic acid or anhydride, to form an acidic intermediate. This acidic intermediate is reacted with a polyamine to form a product which is useful as an additive in fuels, lubricant compositions and hydrocarbon oils.

3,687,906
ANHYDRIDE POLYMER AMINATION PROCESS

Alden W. Hanson; Syamalarao Evani, and Lewis R. Drake, all of Midland, Mich., assignors to The Dow Chemical Company, Midland, Mich.

Filed May 24, 1971, Ser. No. 146,468
Int. Cl. C08f 27/08
U.S. Cl. 260—78.5 T 4 Claims

The preparation of water soluble polymers by amination of an anhydride containing polymer such as styrene-maleic anhydride may be effected with better control and moderation of the reaction exotherm by mixing said anhydride polymer in certain proportions with a similar, previously ammoniated polymer having an excess of aminating agent absorbed thereon. The process is readily adaptable to a continuous process by merely recycling a portion of the final product to reabsorb excess aminating agent.

3,687,907
RECOVERY OF SOLVENT IN ARYLENE SULFIDE POLYMER PRODUCTION

Willie W. Crouch, and Charles W. Moberly, both of Bartlesville, Okla., assignors to Phillips Petroleum Company

Filed Nov. 9, 1970, Ser. No. 88,199
Int. Cl. C08g 23/00
U.S. Cl. 260—79.1 5 Claims

A polar organic solvent selected from amides, lactams, and sulfones is extracted from an aqueous solution containing alkali metal halide. In the production of arylene sulfide polymers by the reaction of a polyhalo-substituted aromatic compound with an alkali metal sulfide in a polar organic solvent, solids are removed from an aqueous mixture of the reaction effluent and polar organic solvent is recovered from the aqueous solution by extraction with a solvent. In a preferred embodiment N-methyl-2-pyrrolidone is recovered from the aqueous solution by extraction with a solvent such as dichloromethane, chloroform, and 1,1,2,2-tetrachloroethane.

3,687,908
POLYMERS CONTAINING NITRILE AND THIOAMIDE GROUPS AND THEIR PREPARATION

Lewellyn G. Picklesimer, Dayton, Ohio, assignor to The United States of America as represented by the Secretary of the United States Air Force

Filed Feb. 2, 1971, Ser. No. 112,021
Int. Cl. C08f 27/06
U.S. Cl. 260—79.5 NV 12 Claims

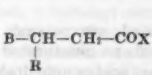
Novel polymers containing nitrile and thioamide groups are prepared by contacting a polymer of acrylonitrile or vinylidene cyanide with hydrogen sulfide at a temperature below about 50° C in the presence of a catalytic amount of an alkali metal carbonate. The polymers are useful as coatings and in the preparation of fibers and films.

3,687,909
REACTIVE BETA-LACTONE-CONTAINING POLYMERS AND A METHOD FOR THEIR PREPARATION

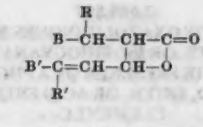
Walter L. Vaughn, Angleton, Tex., assignors to The Dow Chemical Company Midland, Mich.

Filed Feb. 9, 1970, Ser. No. 11,361
Int. Cl. C08f 15/40
U.S. Cl. 260—80.78 8 Claims

Polyalkylene copolymers containing interlinking beta-lactone groups are prepared by treating an olefin-alkylene carboxylic acid copolymer, containing at least one group of the formula



with a tertiary amine to interlink at least two segments of said copolymers through a beta-lactone group of the formula



wherein B and B′ are segments of the polyalkylene chain; R and R′ are H, alkyl, phenyl, COOH, or a segment of the polyalkylene chain; and X is a halogen. The copolymers containing these beta-lactone groups may react further to give rise to insoluble films and coatings, and, further, synergistically improve the performance of textile oil- and water-proofing agents.

3,687,910
TRANSITION METAL OXIDE CATALYSTS

Richard Hamilton Jones, Newark, Del., assignor to E. I. du Pont de Nemours and Company, Wilmington, Del.

Filed March 20, 1970, Ser. No. 21,484
Int. Cl. C08f 1/56, 3/06
U.S. Cl. 260—80.78 21 Claims

A catalyst component comprising the product formed by heating at from 150°C. to 400°C., the secondary and/or tertiary alkoxide of the metals of Groups IVB, VB, and VIB, and, optionally, aluminum trialkyl, secondary aluminum alkoxide or tertiary aluminum alkoxide, the heating being done optionally in the presence of hydrocarbon solvent and/or tertiary alcohol and/or water; polymerization catalysts comprising (a) the catalyst component and (b) at least one alkyl or aryl of the metals of Groups IA, IIA, IIB, and IIIA; and a process for polymerization of ethylenically unsaturated olefins which utilizes the above polymerization catalyst.

3,687,911
PROCESS FOR THE PRODUCTION OF OLEFINIC RUBBERY COPOLYMERS OF MODIFIED MOLECULAR WEIGHT

Masao Shiraishi, and Kiyoshi Maeda, both of Yokkaichi, Japan, assignors to Mitsubishi Petrochemical Co., Ltd., Tokyo, Japan

Filed Sept. 24, 1970, Ser. No. 75,296
Claims priority, application Japan, Sept. 27, 1969, 44/76581
Int. Cl. C08f 15/40
U.S. Cl. 260—80.78 10 Claims

A process for copolymerizing either ethylene with a C_3 or above alpha-olefin or ethylene with a C_3 or above alpha-olefin and an unconjugated diene in the presence of a Ziegler catalyst for polymerization of olefins, consisting of a transition metal compound component and an organoaluminum compound component, as well as in the copresence of a molecular modifier to produce an olefinic rubbery copolymer, the improvement wherein the copolymerization reaction is carried out in the copresence of an epoxy fatty acid ester as the molecular weight modifier.

3,687,912
CROSSLINKED ACRYLONITRILE COPOLYMERS

Herbert Corte, Opladen, and Harold Heller, Leichlingen, both of Germany, assignors to Farbenfabriken Bayer Aktiengesellschaft, Leverkusen, Germany

Continuation of Ser. No. 802,243, Feb. 25, 1969, abandoned. This application Sept. 24, 1970, Ser. No. 75,238
Claims priority, application Germany, March 14, 1968, P 17 20 803.6; March 14, 1968, P 17 20 804.7
Int. Cl. C08f 15/36, 15/40
U.S. Cl. 260—80.81 6 Claims

Cross-linked acrylonitrile copolymer wherein the cross-linking monomer is a carbocylic carboxylic acid ester having two non-conjugated polymerizable double bonds and preparation thereof by free radical copolymerization.

3,687,913
CONTINUOUS PROCESS FOR THE PREPARATION OF LIVING POLYMER

Yutaka Hoshino; Yoshikazu Iwaki; Koshiro Matsukawa; Akira Nakada; Fumio Sato, and Kazuo Uno, all of Niigata, Japan, assignors to Nippon Soda Co., Ltd., Tokyo, Japan

Filed March 6, 1970, Ser. No. 17,301
Int. Cl. C08d *3/06, 3/08*
U.S. Cl. 260—82.1 6 Claims

Conjugated diolefin polymer having a narrow molecular weight distribution and a well coincident value of an average molecular weight with the expected value calculated from a molar ratio of monomer to initiator is continuously produced by employing a tubular reactor having a plural number of monomer inlets, the initiator being passed through from one end to the other end and the monomer diluted with aliphatic or cycloaliphatic hydrocarbon being fed from the monomer inlets, at a temperature maintained between −20° C and −80° C.

3,687,914
COPOLYMERS OF 2-PHENYL ALLYL ALCOHOL AND BUTADIENE, TERPOLYMERS THEREOF WITH STYRENE, AND THEIR PREPARATION

Marc O. Thienot, Park Forest, Ill., and Joseph A. Verdol, White Plains, N.Y., assignors to Atlantic Richfield Company, New York, N.Y.

Filed Jan. 6, 1969, Ser. No. 789,380
Int. Cl. C08d *3/02, 1/22*
U.S. Cl. 260—82.1 1 Claim

Copolymers are obtained consisting essentially of 2-phenyl allyl alcohol and butadiene in molar ratio of about 1:1 to 1:22, the major portion of the butadiene in the copolymer having the trans-1-4-structure. Terpolymers are obtained consisting essentially of 2-phenyl allyl alcohol, butadiene and styrene in molar ratios of about 1:2–3:1–4. The copolymers vary from viscous oily copolymers to firm, rubbery copolymers. The terpolymers are rubbery and can be used as synthetic rubbers. The copolymers are useful to prepare crosslinkable coatings, plasticizers and adhesives. High yields, often quantitative, of the copolymers are obtained with an azo catalyst. Water soluble persulfate catalysts and azo catalysts in aqueous medium give good yields of the terpolymers.

3,687,915
PROCESS FOR THE PRODUCTION OF SYNTHETIC RUBBERS

Ugo Nistri, Via Breno 9; Benito Busti, Via Enrico Fermi 16/A, and Giulio Grazzini, Via Gozzano 18, all of Milan, Italy

Filed Oct. 9, 1969, Ser. No. 865,189
Claims priority, application Italy, Oct. 12, 1968, 22415 A/68
Int. Cl. C08d *5/00*; C08f *1/88, 1/92*
U.S. Cl. 260—83.3 6 Claims

Butadiene-styrene or acrylonitrile rubbers are separated from emulsion-polymerization latices on a heated surface.

3,687,916
ORGANOALUMINUM COMPOUNDS AS ADJUVANTS IN AN ORGANOCALCIUM INITIATED POLYMERIZATION OF CONJUGATED DIENES AND/OR MONOVINYL AROMATIC COMPOUNDS

Francis X. Mueller, Jr., Louisville, Ky., and James D. Brown, Bartlesville, Okla., assignors to Phillips Petroleum Company

Filed Dec. 16, 1968, Ser. No. 784,201
Int. Cl. C08d *3/06, 1/32*; C08f *19/08*
U.S. Cl. 260—83.7 5 Claims

Polymers are produced from conjugated dienes and monovinyl-substituted aromatic compounds by employing a polymerization initiator system of an organoaluminum adjuvant and an organocalcium initiator so as to unexpectedly improve and control the polymerization process.

3,687,917
HOMOPOLYMERIZATION OR COPOLYMERIZATION OF VINYL CHLORIDE IN THE ABSENCE OF SOLVENTS OR DISPERSING AGENTS

Karl Wisseroth, Ludwigshafen; Hans-Georg Trieschmann, Hambach; Peter Dodel, Ludwigshafen; Lothar Hoehr, Buerstadt; Rudolf Herbeck, Frankenthal, and Richard Scholl, Gruenstadt, all of Germany, assignors to Badische Anilin- & Soda-Fabrik Aktiengesellschaft Ludwigshafen(Rhine), Rhineland,Pfalz, Germany

Filed Aug. 19, 1970, Ser. No. 65,236
Int. Cl. C08f *3/30, 1/04, 15/02*
Claims priority, application Germany, Aug. 22, 1969, P 19 42 823.0
U.S. Cl. 260—85.5 XA 10 Claims

Process for the polymerization of vinyl chloride in the absence of solvents or dispersing agents in two stages.

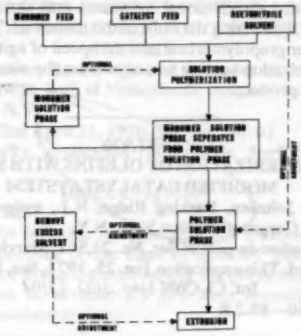
In the first stage the liquid monomers are polymerized to a conversion of from 1 to 15 percent; in the second stage polymerization is continued in the powder phase in the absence of liquid vinyl chloride.

The process may be carried out continuously and gives very pure polymers which may be used for all purposes for which polyvinyl chloride is usually employed.

3,687,918
ACRYLONITRILE POLYMERIZATION

Gordon W. Calundann, Newark, N.J., assignor to Celanese Corporation, New York, N.Y.

Filed June 16, 1969, Ser. No. 833,539
Int. Cl. C08f *3/76, 15/38*
U.S. Cl. 260—85.5 ES 15 Claims

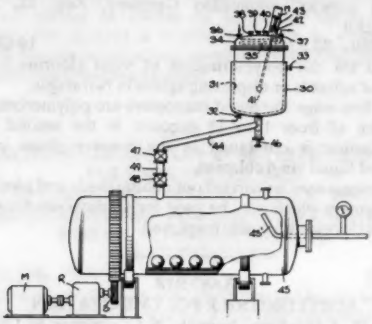


A method of polymerizing acrylonitrile polymers at elevated temperatures and superatmospheric pressure conditions in a novel organic, preferably aqueous-organic, reaction medium in which the monomeric reactants and the polymerized acrylonitrile are soluble under the polymerization conditions. The polymerization conditions may correspond to or are conveniently changed to polymer shaping conditions utilizing the same solvent-reaction medium, thus eliminating polymer recovery, polymer washing, polymer dissolution and the like, process steps. The organic polymerization medium is a monomer and polymer solvating amount of acetonitrile, generally in an amount of 60 to 100 percent by weight of the solvent solution with the residual amount being preferably water. The process is particularly suitable for continuous reaction and polymer shaping wherein an effluent solution of polymer and organic or aqueous-organic reaction medium is continuously withdrawn from the reaction system, maintained under solubilizing conditions of heat and superatmospheric pressure, with suitable adjustment of solvent concentrations as desired to provide homogeneous polymer suitable for extrusion into a shaped article.

3,687,919
POLYMERIZATION IN MASS OF ETHYLENIC MONOMERS AND PRODUCTS PRODUCED THEREBY

Jean Claude Thomas, Lyon, Rhone, France, assignor to Produits Chimiques Pechiney-Saint-Gobain, Paris, France

Filed March 17, 1966, Ser. No. 535,092
Claims priority, application France, March 17, 1965, 659561
Int. Cl. C08f 1/04, 3/30, 15/30
U.S. Cl. 260—87.1 11 Claims

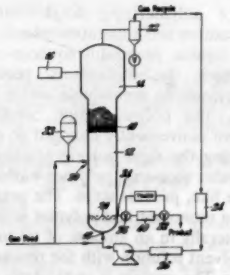


A process of producing spherical particles of ethylenic monomers with controlled size distribution by prepolymerizing a portion of the monomer with turbulent agitation, transferring the prepolymerized monomer and mixing it with a large quantity of additional monomer and slowly and mild agitation polymerizing the bulk of the monomer. The quantity of monomer prepolymerized and the speed of agitation during prepolymerization serving as controls on the size distribution of the final product.

3,687,920
POLYMERIZATION OF OLEFINS WITH SILANE MODIFIED CATALYST SYSTEM

Robert N. Johnson, Basking Ridge, N.J., assignor to Union Carbide Corporation, New York, N.Y.

Continuation-in-part of Ser. No. 22,561, March 25, 1970, abandoned. This application Jan. 25, 1971, Ser. No. 109,168
Int. Cl. C08f 1/44, 3/02, 15/04
U.S. Cl. 260—88.2 R 75 Claims

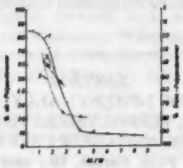


Silane compounds of the structure $H_3Si[SiH_2]_mH$ and $R_{4-n}SiH_n$ wherein m is 0 to 3 inclusive, n is 0 to 3 inclusive and R is C_1 to C_{10} hydrocarbon are used with supported bis(cyclopentadienyl)chromium [II] catalysts for the polymerization of olefins in order to improve the productivity of the catalyst.

3,687,921
PROCESS FOR THE PRODUCTION OF CIS-POLYPENTENAMERS

Wolfgang Oberkirch, Cologne; Peter Gunther, Opladen, and Gottfried Pampus, Leverkusen, all of Germany, assignors to Farbenfabriken Bayer Aktiengesellschaft, Leverkusen, Germany

Filed Oct. 26, 1970, Ser. No. 83,831
Claims priority, application Germany, Nov. 13, 1969, P 19 57 025.3
Int. Cl. C08f 3/02, 7/02, 15/02
U.S. Cl. 260—88.2 R 8 Claims



Cyclopentene is polymerized or copolymerized with a catalyst of tungsten hexafluoride and an organoaluminium compound to yield predominantly cis-polypentenamers.

3,687,922
α-N-ALKYLACRYLIC ESTERS AND THEIR POLYMERS

Henry Gisser, Philadelphia, and Helen E. Mertwoy, Dresher, both of Pa., assignors to The United States of America as represented by the Secretary of the Army

Filed Aug. 5, 1970, Ser. No. 61,436
Int. Cl. C08f 3/62
U.S. Cl. 260—89.5 A 3 Claims

Methyl- and ethyl-α-n-alkylacrylates (alkyl C_8H_{17}) prepared by a series of reactions yielding unambiguous monomers will homopolymerize to high molecular weight polymers in the presence of sodium naphthalene. A method for preparing methyl- and ethyl-α-n-alkylacrylates in a pure, isomer-free form is disclosed.

3,687,923
POLYMERIZATION OF ETHYLENIC MONOMERS AND PRODUCTS THEREOF

Jean Claude Thomas, Lyon, Rhone, and Salomon Soussan, Saint-Fons, Rhone, both of France, assignors to Produits Chimiques Pechiney-Saint-Gobain, Paris, France

Filed March 17, 1966, Ser. No. 535,037
Claims priority, application France, March 17, 1965, 659562
Int. Cl. C08f 3/30, 1/04, 15/30
U.S. Cl. 260—92.8 R 9 Claims

An improved process for the production of fine spherical grains of substantially uniform size of an ethylenic polymer and in particular vinyl chloride, which comprises polymerizing a portion of the monomer with turbulent agitation to form seeds, and adding a larger portion of liquid monomer and continuing the polymerization with mild agitation.

3,687,924

PRECIPITATION POLYMERIZATION OF α-METHYLSTYRENE

Herbert Schott, Hofheim/Taunus; Walter Herwig, Frankfurt/Main, and Siegfried Sommer, Bad Soden/Taunus, all of Germany, assignors to Farbwerke Hoechst Aktiengesellschaft vormals, Meister Lucius & Bruning, Frankfurt/Main, Germany

Filed Dec. 5, 1969, Ser. No. 882,703

Claims priority, application Germany, July 30, 1969, P 18 14 870.4

Int. Cl. C08f 7/02, 1/11

U.S. Cl. 260—93.5 S 9 Claims

The present invention relates to a process for precipitation polymerization of α-methylstyrene in a hydrocarbon medium in which poly-α-methylstyrene is insoluble or only little soluble. The polymerization is initiated by a finely divided alkali metal which is used together with certain phosphoric acid amides or ethers or mixtures thereof as polymerization accelerators.

3,687,925

PROCESS FOR THE PREPARATION OF IMPROVED CIS-1,4-POLYISOPRENE

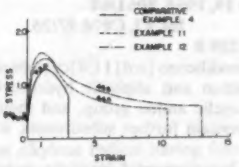
Toshio Fukui, Kamakura, Japan, assignor to The Japanese Geon Company, Ltd., Tokyo, Japan

Filed July 27, 1970, Ser. No. 58,225

Claims priority, application Japan, July 29, 1969, 44/59329

Int. Cl. C08d 1/14, 3/02, 3/10

U.S. Cl. 260—94.3 8 Claims



In the process for the preparation of cis-1, 4-polyisoprene by polymerizing isoprene by use of a catalyst composed essentially of an organoaluminum compound and a titanium tetrahalide, an improvement wherein a compound having two independent conjugate diene groups is present in the polymerization system in an amount of up to 5 parts by weight per 100 parts by weight of the isoprene.

3,687,926

SURFACTIN

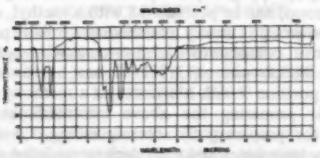
Kei Arima; Gakuzo Tamura, both of Tokyo, and Atsushi Kakinuma, Kyoto, all of Japan, assignors to Takeda Chemical Industries, Ltd., Osaka, Japan

Continuation-in-part of Ser. No. 769,231, Oct. 21, 1968, abandoned. This application June 1, 1970, Ser. No. 42,122

Claims priority, application Japan, Oct. 21, 1967, 42/67735

Int. Cl. C07c 103/52; A61k 21/00

U.S. Cl. 260—112.5 2 Claims



Surfactin, which especially is useful for treating or preventing hypercholesterolemia, but is also useful in inhibiting loss of activity of various active substances, etc., is prepared by culturing a Surfactin-producing strain belonging to the genus Bacillus in a culture medium containing assimilable carbon sources and digestible nitrogen sources under aerobic conditions until Surfactin is substantially accumulated in the culture broth; and recovering the accumulated Surfactin therefrom.

3,687,927

ORGOTEIN ISOLATION PROCESS EMPLOYING SINGLE ION EXCHANGE RESIN HAVING BOTH ACIDIC AND BASIC GROUPS

Wolfgang Huber, San Francisco, Calif., assignor to Diagnostic Data, Inc., Palo Alto, Calif.

Continuation-in-part of Ser. No. 657,866, Aug. 2, 1967, abandoned, which is a continuation-in-part of Ser. No. 576,454, Aug. 31, 1966, abandoned. This application June 7, 1971, Ser. No. 150,809

Int. Cl. C07g 7/04

U.S. Cl. 260—113 14 Claims

An improved process for reducing the divalent metal ion content to less than 10^{-7} M concentration of a solution of orgotein containing greater than 10^{-7} M concentration of a divalent metal having an ionic radius from 0.65 to 0.79 A, which comprises reducing the ion content to less than 10^{-7} M by passing the buffer solution having an ion content greater than 10^{-7} M through an ion exchange resin bed consisting of a single ion exchange resin having both acidic and basic groups which are in sufficiently close proximity so that the resin is partially neutralized internally yet sufficiently separated spatially so that the resin has absorptive attraction for both anions and cations.

3,687,928

PROCESS OF ISOLATING NATIVE ALBUMIN AND/OR GLOBULIN FROM AN AQUEOUS SYSTEM COMPRISING RAISING THE PH TO ABOVE 8.5 AND THEN LOWERING THE PH TO THE ISOELECTRIC POINT TO PRECIPITATE PROTEIN

Abraham Brouwer, Harderwijk, and Gerardus M. A. M. Van-Loom, Reeuwijk, both of Netherlands, assignors to Melkcentrale Gouda N.V.

Filed April 21, 1970, Ser. No. 30,601

Claims priority, application Netherlands, April 22, 1969, 69.06198

Int. Cl. C07g 7/00

U.S. Cl. 260—122 8 Claims

A process for isolating from an aqueous solution in their natural form proteins of the class of albumin, globulin and mixtures thereof which includes raising the pH of the aqueous protein solution to at least 8.5 and then flocculating the protein at its iso-electric point.

3,687,929

BASIC DYESTUFFS CONTAINING A QUATERNIZED PYRIDINE OR QUINOLINE RADICAL

Visvanathan Ramanathan, Klybeckstrasse 18, Basel, and Hans Wilhelm Liechti, Breugglistrasse 7, Oberwil, Basel Land, both of Switzerland

Continuation-in-part of Ser. No. 520,863, Jan. 17, 1966, abandoned. This application May 26, 1969, Ser. No. 828,008

Claims priority, application Switzerland, Jan. 18, 1965, 674/65

Int. Cl. C09b 29/36

U.S. Cl. 260—156 5 Claims

Basic azo-dyestuffs containing a quaternized pyridine- or quinoline carbonyloxy- or carbonylimino-radical bound to an aromatic nucleus directly or via an alkylene-, alkylene- oxy- or alkyleneimino bridge.

3,687,930

Patent Not Issued For This Number

3,687,931

HALOGENATED PURINE AND PYRIMIDINE NUCLEOSIDES AND PROCESS THEREFOR

Julien P. Verheyden, and John G. Moffatt, Los Altos, both of Calif., assignors to Syntex Corporation, Panama, Panama

Filed March 19, 1970, Ser. No. 21,207
Int. Cl. C07d *51/52, 51/54*
U.S. Cl. 260—211.5 R 32 Claims

Reacting suitably protected pyrimidine nucleoside and suitably protected purine nucleoside with triphenylphosphine and carbon tetrabromide or carbon tetrachloride in a dipolar aprotic solvent yields the corresponding 5′-deoxy-5′-halo nucleoside derivative. Reacting 5′-protected 2′-deoxy pyrimidine nucleoside in a similar fashion yields a mixture of the two possible isomeric 2′, 3′-dideoxy-3′-halo-5′-protected pyrimidine nucleosides. Reacting 5′-protected uridine derivatives in a similar fashion yields the corresponding 2′-deoxy-2′-chloro derivative. These compounds and disclosed derivatives thereof have antibiotic properties and are useful in controlling metabolic processes.

3,687,932

CRYSTALLINE CYTIDINE-5′-DIPHOSPHATE CHOLINE MONOHYDRATE AND PRODUCTION THEREOF

Hideo Nakamachi; Kazuhide Kamiya, both of Osaka; Masao Nishikawa, and Shoichiro Fujii, both of Kyoto, all of Japan, assignors to Takeda Chemical Industries, Ltd., Osaka, Japan

Filed April 24, 1970, Ser. No. 31,547
Claims priority, application Japan, April 24, 1969, 44/32072
Int. Cl. C07d *51/52*
U.S. Cl. 260—211.5 R 1 Claim

Crystalline cytidine-5′-diphosphate choline monohydrate is produced by

a. adding a hydrophilic organic solvent to an aqueous solution system of cytidine-5′-diphosphate choline in the pH range of from about 2 to about 4, or

b. keeping cytidine-5′-diphosphate choline standing at a relative humidity of not less than about 32 percent and at a temperature in the range of from about 17°C to about 70°C for not shorter than about 5 days.

3,687,933

Patent Not Issued For This Number

3,687,934

N′-SUBSTITUTED N-ARYLSULFONYL UREAS

Henri Dietrich, Arlesheim, Switzerland, assignor to Ciba-Geigy Corporation

Division of Ser. No. 667,363, Sept. 13, 1967, Pat. No. 3,575,962. This application July 16, 1970, Ser. No. 62,756
Int. Cl. C07d *41/08*
U.S. Cl. 260—239 BB 3 Claims

N-arylsulfonyl-1,2,4,5-tetrahydro-3H-3-benzazepine-3-carboxamides and addition salts thereof with bases, which compounds have useful hypoglycaemic action, as well as starting materials for their production; therapeutic compositions containing these carboxamides or their pharmaceutically acceptable addition salts and processes of producing hypoglycaemic effects in mammals. An illustrative embodiment is N-(p-tolylsulfonyl)-1,2,4,5-tetrahydro-3H-3-benzazepine-3-carboxamide.

3,687,935

1,2,4,5-TETRAHYDRO-3H-3-BENZAZEPINE-3-CARBONYL CHLORIDE

Henri Dietrich, Arlesheim, Switzerland, assignor to Ciba-Geigy Corporation

Division of Ser. No. 667,363, Sept. 13, 1967, Pat. No. 3,575,962. This application July 16, 1970, Ser. No. 62,761
Int. Cl. C07d *41/08*
U.S. Cl. 260—239 BB 1 Claim

N-arylsulfonyl-1,2,4,5-tetrahydro-3H-3-benzazepine-3-carboxamides and addition salts thereof with bases, which compounds have useful hypoglycaemic action, as well as starting materials for their production; therapeutic compositions containing these carboxamides or their pharmaceutically acceptable addition salts and processes of producing hypoglycaemic effects in mammals. An illustrative embodiment is N-(p-tolylsulfonyl)-1,2,4,5-tetrahydro-3H-3-benzazepine-3-carboxamide.

3,687,936

11-AMINOALIPHATIC-5:10-METHANODIBENZO [A:D] [1:4] CYCLOHEPTADIENES AND THE SALTS THEREOF

Max Wilhelm, Allschwil, Switzerland, assignor to Ciba-Geigy AG, Basel, Switzerland

Continuation-in-part of Ser. No. 456,828, May 18, 1965, Pat. No. 3,423,425. This application Sept. 27, 1968, Ser. No. 764,046
Claims priority, application Switzerland, June 19, 1964, 8060/64; June 19, 1964, 8061/64
Int. Cl. C07d *87/26*
U.S. Cl. 260—239 B 6 Claims

5:10-Methanodibenzo [a:d] [1:4]cycloheptadienes containing in 11-position and aliphatic hydrocarbon radical substituted by a cyclic amino group, and their salts. The compounds may contain further substituents, except in 11-position.

The compounds are useful, inter alia, as sedatives, tranquilizers and histaminolytics.

3,687,937

1,5-METHANO-3-BENZAZOCINE DERIVATIVES

Karel Wiesner, and Jarvis G. McCluskey, both of Fredericton, New Brunswick, Canada, assignors to The United States of America

Division of Ser. No. 741,894, July 2, 1968, Pat. No. 3,576,812. This application June 23, 1970, Ser. No. 49,203
Int. Cl. C07d *39/00*
U.S. Cl. 260—239.3 T 9 Claims

There are disclosed herein 1,5-methano-1-methyl-3-benzazocines optionally substituted in position 3 with methyl, allyl, 3,3-dimethylallyl, cyclopropylmethyl, anilinoethyl, 3-anilinopropyl, phenethyl, 3-phenylpropyl, 2-hydroxyphenethyl, 3-hydroxy-3-phenylpropyl, phenacyl, 3-oxo-3-phenylpropyl, cinnamyl, p-aminophenethyl, or 3-(p-aminophenyl)propyl groups; in position 9 with a hydroxy, or a methoxy group; and in position 11 with a methyl, a hydroxy, or an amino group. The key intermediates for the preparation of the above compounds, 1,2,5,6-tetrahydro-1-methyl-1,5-methano-3-benzazocine-4,11(3H)-diones optionally substituted in position 9 with a hydroxy or a methoxy group, the process for preparing the above intermediates, and the processes for preparing the corresponding 1,5-methano-1-methyl-3-benzazocines and their derivatives listed above from the above intermediates are also disclosed. The 1,5-methano-1-methyl-3-benzazocines disclosed above have analgesic, anti-inflammatory, and cholesterol biosynthesis inhibiting properties, and methods for their pharmacological use are also given.

3,687,938

PROCESS FOR THE PREPARATION OF LACTAM-LEWIS ACID COMPLEX

Mitsuo Masaki, 1-8, -chome, Kasuga, Chiba-shi, Chiba-ken; Kiyoshi Fukui, 44-4, Yamaki, Ichihara-shi, Chiba-ken; Mashiro Ueda, 44-4, Yamaki, Ichihara-shi, Chiba-ken, and Kiyomi Okimoto, 44-4, Yamaki, Ichihara-shi, Chiba-ken, all of Japan, assignors to UBE Industries, Ltd., Ube-shi, Japan

Filed Aug. 31, 1970, Ser. No. 68,517
Int. Cl. C07d 41/06
U.S. Cl. 260—239.3 R 4 Claims

A process for the preparation of lactams, which comprises reacting lactim-O-sulfonic acid with a complex of alicyclic ketoxime with a halide which is a Lewis acid, and recovering the complex of lactam with the halide.

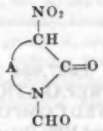
3,687,939

PROCESS FOR THE PRODUCTION OF 1-FORMYL-3-NITRO-AZACYCLO-ALKAN-2-ONES

Verena R. Foitl, Basel, and Walter Traber, Riehen, both of Switzerland, assignors to Ciba-Geigy Corporation, Ardsley, N.Y.

Filed June 24, 1970, Ser. No. 49,554
Int. Cl. C07d 41/06
U.S. Cl. 260—239.3 R 3 Claims

A new process for the production of 1-formyl-3-nitro-azacyclo-alkan-2-one compounds of the Formula I

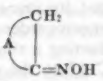


(I)

wherein

A represents an alkylene radical having four to 10 carbon atoms in its chain and being unsubstituted or substituted by at least one lower alkyl radcial,

characterized by reacting a cycloalkanone oxime of the Formula II



(II)

with the formamide of a secondary amine and a halogenating agent, nitrating the intermediate product obtained and then hydrolyzing it, is described.

The 1-formyl-3-nitro-azacycloalkan-2-ones are important intermediates in the production of amino acids, in particular of lysin and of agricultural chemicals.

3,687,940

PROCESS FOR THE PRODUCTION OF 3-AMINO-AZACYCLOHEPTAN-2-ONE

Verena R. Foitl, 58 Nonnenweg, Basel, and Walter Traber, 6 Kappeligasse, Riehen, both of Switzerland

Filed June 24, 1970, Ser. No. 49,559
Int. Cl. C07d 41/06
U.S. Cl. 260—239.3 R 4 Claims

A process is given for the production of 3-amino-azacycloheptan-2-one which comprises reducing 1-formyl-3-nitroazacycloheptan-2-on with hydrogen under pressure in the presence of ammonia. It is thus possible to obtain 3-amino-azacycloheptan-2-one (α-amino-ε-caprolactam) by a technically simple process.

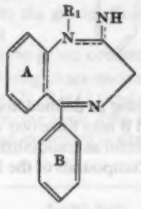
3,687,941

2-IMINOBENZODIAZEPINE DERIVATIVES

Kanji Meguro, Nishinomiya; Yutaka Kuwada, Ashiya, Hyogo, and Toru Masuda, Nishinomiya, all of Japan, assignors to Takeda Chemical Industries, Ltd., Higashi-ku, Osaka, Japan

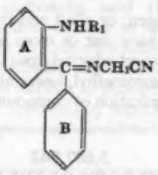
Filed July 8, 1969, Ser. No. 840,032
Claims priority, application Japan, July 12, 1968, 43/49236; July 12, 1968, 43/49237; July 8, 1968, 43/47661; June 21, 1969, 44/49178
Int. Cl. C07c 119/14, 121/66; C07d 53/06
U.S. Cl. 260—239 BD 6 Claims

Compounds of the formula



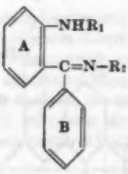
(I)

wherein R_1 is hydrogen or alkyl and the respective benzene rings A and B may have one or more substituents which are the same or different and selected from the group consisting of halogen, nitro, trifluoromethyl, alkyl and alkoxy are prepared by subjecting a compound of the formula



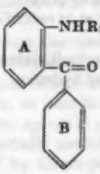
(II)

wherein R_1 has the same meaning as above and the respective benzene rings A and B may have one or more substituents as defined above to a ring closure reaction. Compounds of the formula II are produced by reacting a compound of the formula



(III)

wherein R_1 has the same meaning as defined above and R_2 is hydrogen, alkyl, hydroxyalkyl or aralkyl with aminoacetonitrile. Compounds of the formula III are produced by reacting a compound of the formula

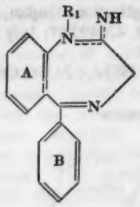


(IV)

with a compound of the formula

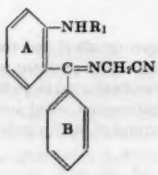
$$R_2NH_2$$

wherein R_2 is hydrogen, alkyl, hydroxyalkyl or aralkyl.



(I)

wherein R_1 has the meaning as defined above, and the respective benzene rings A and B may have one or more substituents as indicated above are useful as tranquilizing, muscle relaxant, anticonvulsant agents. Compounds of the formula



(II)

wherein R_1 is hydrogen, or alkyl and the respective benzene rings A and B may have one or more substituents which are the same or different and selected from the group consisting of halogen, nitro, trifluoromethyl, lower alkyl and lower alkoxy, are useful in the preparation of compounds II.

3,687,942

21-MERCAPTO-STEROIDS OF THE PREGNANE SERIES

Georg Anner, Basel, Switzerland, assignor to Ciba-Geigy Corporation, Ardsley, N.Y.

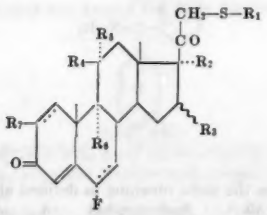
Filed Dec. 18, 1970, Ser. No. 99,680

Claims priority, application Switzerland, Dec. 25, 1969, 19242/69

Int. Cl. C07c *169/32*

U.S. Cl. 260—239.55 **1 Claim**

21-Mercapto-steroids of the pregnane series of the general formula



wherein

R_1 = H or an acyl radical

R_2 = H or free or esterified hydroxyl

R_3 = CH_3 or α-hydroxy, free or esterified

or

$R_2 + R_3$ = alkylidene or cycloalkylidene dihydroxy

R_4 = Cl or free or esterified hydroxy

R_5 = H

or

$R_4 + R_5$ = oxo

R_4 = H, Cl or F

or

$R_4 + R_5$ = a double bond or an epoxy group

R_7 = H or, if a double bond in 1,2-position is present, also Cl, e.g., the 6α,9α-difluoro-2-chloro-16α-methyl-11β,17α-dihydroxy-21-acetyl-mercapto-pregna-1,4-diene-3,20-dione. Use: antiinflammating agents.

3,687,943

FLUORINATION OF UNSATURATED STEROIDS

Derek H. R. Barton, Department of Chemistry, Imperial College of Science and Technology, London, S.W.7, England, and Robert H. Hesse, Research Institute for Medicine and Chemistry Inc., 49 Amherst St., Cambridge, Mass.

Continuation-in-part of Ser. No. 667,000, Sept. 11, 1967, abandoned, and a continuation-in-part of Ser. No. 736,293, June 12, 1968, abandoned. This application March 21, 1969, Ser. No. 809,389

Int. Cl. C07c *173/00*

U.S. Cl. 260—239.55 A **8 Claims**

Electrophilic addition of fluorine to carbon-carbon multiple bonds which comprises reacting various unsaturated organic compounds in the liquid phase at low temperature with hypofluorites in which the fluoroxy group is covalently bonded to an inert electron-attracting group. A typical example of such a hypofluorite is trifluoromethyl hypofluorite. The reaction is generally applicable to a wide variety of aliphatic and aromatic organic compounds containing carbon-carbon multiple bonds.

3,687,944

PROCESS FOR THE PREPARATION OF BUFALIN AND RELATED COMPOUNDS

George R. Pettit, 6232 Bret Hills Drive, Paradise Valley, Ariz.; Leonard E. Houghton, 1 Grosvenor Avenue, Hartford, Northwich, Chesire, England; John C. Knight, 1018 Coolidge Avenue, Kalamazoo, Mich., and Fred Bruschweiler, 1100 East Lemon Street, #2 Tempe, Ariz.

Filed May 8, 1970, Ser. No. 35,912

Int. Cl. C07c *173/04*

U.S. Cl. 260—239.57 **25 Claims**

There is provided a novel method of preparing the cardiac active agents bufalin and its immediate precursor resibufogenin from the well known cardenolide, digitoxigenin. The method comprises conducting a ring expansion of the five-membered lactone at C–17 to the corresponding six-membered lactone. In this process the five-membered lactone is cleaved to provide a 20-acetal-21-nor-5βnorchol-14-enate ester. The 20-acetal is protected by the formation of an alkylenethioacetal or similar thio derivative, and the carboxylic residue at C–22 homoligized using a modified Arndt-Eistert sequence. Removal of the protecting thio groups yields the corresponding 20-formyl-21-nor-5β-chol-14-enic acid which is then subjected to ring closure and dehydrogenation to yield the known 14-dehydrobufalin which may be converted by known methods to resibufogenin and bufalin.

3,687,945

BASIC β-THIENYL COMPOUNDS

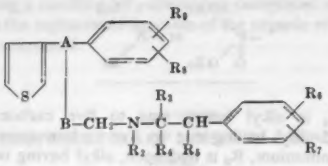
Kurt Thiele, Frankfurt on Main, and Klaus Posselt, Bergen-Enkheim, both of Germany, assignors to Deutsche Gold-und Silber-Scherdeanstalt vormals-Roessler, 3, Frankfurt on Main, Germany

Continuation-in-part of Ser. No. 842,722, July 17, 1969, abandoned. This application July 13, 1970, Ser. No. 54,643

Int. Cl. A61k *27/00*; C07d *63/12*

U.S. Cl. 260—240 R **11 Claims**

Compounds are prepared having the formula



wherein the thienyl group can be substituted with one or more lower alkyl groups; the bridging member

$$>A-B-$$

either has the structure

$$>C(OH)-CH(R_1)-$$

or the structure

$$>C=C(R_1)-$$

and R_1, R_2, R_3 and R_4 are hydrogen or lower alkyl groups, R_5 is hydrogen or hydroxy, R_6 and R_7 are the same or different and are hydrogen, halogen, hydroxy, lower alkyl, halo lower alkyl, or lower alkoxy and the groups R_6 and R_8 are the same or different and are hydrogen, hydroxy, lower alkyl or lower alkoxy and the salts thereof. The compounds are pharmacologically active, especially in peripheral and cerebral disorders of blood-flow.

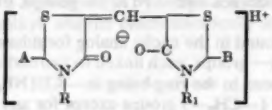
3,687,946

NOVEL TETRANUCLEAR METHINE DYES, PROCESSES FOR PREPARING THE SAME, AND ELECTROPHOTOGRAPHIC SYSTEMS AND SILVER HALIDE EMULSIONS CONTAINING THE SAME

Shi-Kuang Yao, Binghamton, N.Y., assignor to GAF Corporation, New York, N.Y.

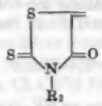
* Filed May 13, 1968, Ser. No. 728,837
Int. Cl. C09b *23/00*
U.S. Cl. 260—240.1 6 Claims

Novel tetranuclear dyes useful as sensitizers in electrophotographic systems as well as silver halide emulsions comprise compounds of the formula:

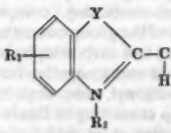


Wherein A is selected from the group consisting of

(1)



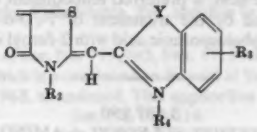
(2)



and

(3) O=

B is selected from the group consisting of (1), (2) and (4)



R is alkyl;

R_1, R_2 and R_4 are selected from the group consisting of alkyl and carboxyalkyl;

R_3 is selected from the group consisting of hydrogen, alkyl and alkoxy; and

Y is selected from the group consisting of Se and S;

such compounds being characterized that when A is (1), B is (1); when A is (2), B is (2) and when A is (3), B is (4).

Processes of producing such dyes as well as electrophotographic processes and materials containing the same are provided.

3,687,947

METHOD FOR RECOVERY OF CEPHALORIDINE

Manuel Debono, Indianapolis, Ind., assignor to Eli Lilly and Company, Indianapolis, Ind.

Filed Oct. 29, 1970, Ser. No. 85,264
Int. Cl. C07d *99/24*
U.S. Cl. 260—243 C 13 Claims

This invention is addressed to a new and improved process for the recovery of 7-(2′-thienylacetamido)-3-pyridinomethyl)-Δ^3-cephem-4-carboxylic acid (i.e., cephaloridine) from an aqueous reaction mixture in which cephalothin is reacted with pyridine in an aqueous solution in the presence of thiocyanate which includes the step of adding a source of barium ions to the reaction mixture to precipitate colored impurities contained therein, followed by separating the precipitate to leave substantially pure cephaloridine in the aqueous solution.

3,687,948

7-[D-(A-AMINO-A-PHENYLACETAMIDO)]-3-(4-METHYL-1,3-OXAZOL-2-YLTHIOMETHYL-3-CEPHEM-4-CARBOXYLIC ACID AND SALTS THEREOF

Leonard Bruce Crast, Jr., Clay, N.Y., assignor to Bristol-Myers Company, New York, N.Y.

Filed Nov. 23, 1970, Ser. No. 92,188
Int. Cl. C07d *99/24*
U.S. Cl. 260—243 C 7 Claims

7-[D-(α-Amino-α-phenylacetamido)]-3-(4-methyl-1,3-oxazol-2-ylthiomethyl)-3-cephem-4-carboxylic acid and its nontoxic, pharmaceutically acceptable salts are valuable as antibacterial agents, as nutritional supplements in animal and man, and are especially useful in the treatment, particularly by oral administration, of infectious diseases caused by many Gram-positive and Gram-negative bacteria.

3,687,949

SYNTHETIC CEPHALOSPORINS

Charles Truman Holdrege, Camillus, N.Y., assignor to Bristol-Myers Company, New York, N.Y.

Filed Jan. 21, 1969, Ser. No. 792,757 The portion of the term of this patent subsequent to Nov. 18, 1986, has been disclaimed.
Int. Cl. C07d *99/24*
U.S. Cl. 260—243 C 19 Claims

7-(α-3-Acylureidophenylacetamido)- and 7-(α-3-acylureidothienylacetamido)cephalosporanic acids and the corresponding betaines and desacetoxy derivatives are valuable as antibacterial agents, as nutritional supplements in animal feeds and as therapeutic agents in poultry and animals, including man, and are especially useful in the treatment of infectious diseases caused by Gram-positive and Gram-negative

bacteria, most particularly those caused by the Pseudomonas genus. 7- D-α-[3-(2'-furoyl)ureido]phenylacetamido cephalosporanic acid, a preferred embodiment of the invention, is prepared by the treatment of 7-(D-α-amino-phenylacetamido)cephalosporanic acid with 2-furoyl isocyanate.

3,687,950

2-AMINO OR METHYL SULFONYL-6-AMINO SULFONYL OR MILKY SULFONYL-4,8-DIPIPERIDINO OR MORPHOLINOPYRIMIDO[5,4-D] PYRIMIDINES

Masuo Murakami, No. 19-1-502, Sengoku 2-chome, Bunkyo-ku; Shigemi Kawahara, No. 1970-27, Kurumemachi Minamisawa, Kitatama-gun; Noriyoshi Inukai, No. 43-5, Sengoku 2-chome, Buny-ku, all of Tokyo; Sanae Ishida, No. 1-8, Motobuto 2-chome, Urawa-shi; Kazuo Imai, No. 1314, Nishincho 2-chome, Omiya-shi, both of Saitama, and Teruaki Ozasa, No. 16-1, Hasune 3-chome, Itabashi-ku, Tokyo, all of Japan

Filed Nov. 20, 1969, Ser. No. 878,527

Int. Cl. C07d *87/46*

U.S. Cl. 260—246 B **10 Claims**

This invention relates to a novel pyrimido[5,4-d]-pyrimidine derivative having sulfonyl groups or a sulfonyl group substituted by a substituted or non-substituted amino group or an alkyl group at the 2- and/or 6-position. The pyrimidine derivative is useful as a platelet aggregation inhibiting agent.

3,687,951

PROCESS FOR THE PREPARATION OF ISATOIC ANHYDRIDE

Siegbert Humburger, Leverkusen, and Willi Hahn, Koeln-Stammheim, both of Germany, assignors to Farbenfabriken Bayer Aktiengesellschaft, Leverkusen, Germany

Filed May 19, 1969, Ser. No. 825,890

Claims priority, application Germany, May 20, 1968, P 17 70 458.4

Int. Cl. C07d *87/10*

U.S. Cl. 260—244 A **10 Claims**

Reacting, in a first step, an aqueous alkali metal salt solution of phthalic acid monoamide, optionally in admixture with phthalimide, under alkaline conditions with alkali metal hypochlorite, e.g., at a temperature of about −5° to +40° C., and adding all at once, in a second step, an amount of acid substantially equivalent to the alkali present in the solution to neutralize such alkali and form isatoic anhydride and thereby cause separation of the isatoic anhydride from the solution, said isatoic anhydride being a known intermediate for the preparation of plant protection agents and dyestuffs.

3,687,952

HALOGENPHENOXY-S-TRIAZINE DERIVATIVES HAVING IMPROVED SOLUBILITY

Roshdy Ismail, 5213 Spich, Germany, assignors to Dynamit Nobel Aktiengesellschaft, Troisdorf, Germany

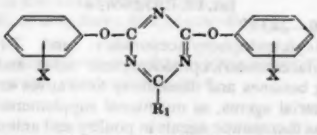
Filed Feb. 19, 1969, Ser. No. 800,699

Claims priority, application Germany, Feb. 21, 1968, P 17 70 591.2; May 31, 1968, P 17 70 549.6

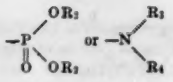
Int. Cl. C07d *55/50*

U.S. Cl. 260—248 CS **10 Claims**

Novel halophenoxy-s-triazine derivatives and salts thereof characterized by improved solubilities having the formula:-



wherein X represents from one to five halogen atoms and R_1 is either of



wherein R_2 is alkyl having one to five carbon atoms, halogenated alkyl having one to five carbon atoms, alkali metal or ammonium, R_3 is hydrogen, alkyl having two to 18 carbon atoms, halogenated alkyl having two to 18 carbon atoms or cycloalkyl, and R_4 is alkyl, cycloalkyl, aryl, halogenated alkyl, halogenated cycloalkyl or halogenated aryl, and wherein R_3 and R_4 taken together with the nitrogen atom to which they are attached form a heterocyclic ring.

The novel triazine derivatives and their salts are suitable for use as water repellants, parting agents, textile adjuvants, as fire retardants, fungicidal, phytotoxic, bactericidal and insecticidal agents.

3,687,953

DERIVATIVES OF DIPROPYLACETAMIDO-2-PYRIMIDINE

Anastasios Dardas, Grenoble, France, assignor to Berthier J. Laboratories S.A., Grenoble, France

Continuation of Ser. No. 675,067, Oct. 13, 1967, abandoned. This application March 30, 1970, Ser. No. 23,988

Int. Cl. C07d *51/42*

U.S. Cl. 260—256.4 N **3 Claims**

Dipropylacetamido pyrimidine and the nuclear substituted alkyl, benzyl, alkoxy, halo, halomethyl or halobenzyl derivatives are described as useful in the preparation of proteins and as radio-protective materials.

3,687,954

CERTAIN DIFLUORAMINO COMPOUNDS

William E. Tyler, III, New Providence, and John R. Lovett, Edison, both of N.J., assignors to Esso Research and Engineering Company

Filed May 27, 1963, Ser. No. 283,951

Int. Cl. C07d *51/72*; C07c *87/22*

U.S. Cl. 260—268 R **20 Claims**

1. A compound having the composition of the general formula:

$$(NF_2)CH_2—N(R')—(CH_2)_nD'''$$

where R' is a negative function of the group consisting of nitro, sulfonyl, aldo, acyl, hydroxyl, and halo;

D''' is a moiety of the group consisting of $—NF_2$, acyloxy, alkoxy and halo functions, alkyl, and a $—N(R')CH_2NF_2$ radical, subscript *n* representing one to two ($—CH_2—$) groups between two —N(R')— groups, otherwise being one;

said compound in the cyclic analog form having one to two —N(R')— groups, each linked to two carbons in the ring, the carbons in the ring being in —CH(NF_2)— groups instead of ($—CH_2—$) groups except for any other carbons in the ring linked to one of the mentioned replaceable functions and to a hydrogen atom; and

said compound also taking the form $(NF_2)CH_2—N(R')—(CHNF_2)_2D'''$ when D''' is the radical $—N(R')CH_2NF_2$.

9. The compound 1,4-dinitro 2,3,5,6-tetrakis (NF_2) piperazine.

10. Method of preparing an NF_2-containing compound from an organic nitrogen-containing compound in which a replaceable function of the group consisting of acyloxy, alkoxy, and chloro is linked to a carbon alpha to a nitrogen atom in the organic compound and a negative function of the groups consisting of nitro, sulfonyl, aldo, acyl, hydroxyl, and a halo function of the group consisting of fluoro and chloro, chloro, is linked to said nitrogen atom, which comprises reacting the organic compound with HNF_2 under reaction conditions to replace the replaceable function by a difluoramino group and

recovering a resulting NF_x-containing compound wherein NF_x replaces the replaceable function of the organic nitrogen-containing compound.

3,687,955

THE TROPINE ESTER OF 2-PHENYL-4-PENTYNOIC ACID

Guido Cerbati, Via C. Loquez, 7 Pisa, and Luigi Turbanti, Via B. da Padule, 10 Pisa, both of Italy

Filed Aug. 6, 1968, Ser. No. 750,479
Claims priority, application Italy, Aug. 9, 1967, 19363 A/67
Int. Cl. C07d *43/06*
U.S. Cl. 260—292 4 Claims

A series of amino esters of 4-pentynoic acid substituted in 2-position with propyl or phenyl, as well as acid addition salts and quaternary compounds thereof. The compounds are effective therapeutic agents having antispasmatic action as well as a regulatory effect on gastric and intestinal hyperkinesia. The invention also relates to methods of producing these compounds.

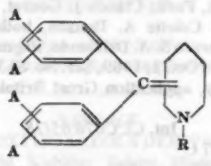
3,687,956

N-HYDROXYALKYL, HYDROXYALKOXYALKYL AND HYDROXYALKOXYALKOXY-ALKYL DIPHENYL-METHYLENE-PIPERIDINES

Dusan Zivkovic, Rhode-Saint-Genese, Belgium, assignor to VCB, Societe Anonyme, Saint-Gilles-leg-Bruzelles, Belgium

Filed April 6, 1970, Ser. No. 26,164
Claims priority, application Great Britain, April 9, 1969, 18,229/69
Int. Cl. C07d *29/18*
U.S. Cl. 260—293.83 11 Claims

New diphenyl-methylene-piperidines acting upon the cardiovascular, pulmonary and central nervous systems and as antihistaminics and antiserotoninics, having the general formula



wherein A is hydrogen, halogen, cyano, halomethyl, alkyl or alkoxy and R is hydroxyalkyl, hydroxyalkoxyalkyl or hydroxyalkoxyalkoxyalkyl; and the pharmaceutically acceptable addition salts thereof.

3,687,957

1-OXYGENATED-6-ACYL-1,2,3,4,5,6-HEXAHYDRO-2,6-METHANO-3-BENZAZOCINES

Fred B. Block, Burkewood Road, Hartsdale, N.Y., and Arthur H. Schroder, 790 Bronx River Road, Bronxville, N.Y.

Filed March 11, 1971, Ser. No. 123,407
Int. Cl. C07d *39/00*
U.S. Cl. 260—293.54 20 Claims

1,2,3,4,5,6-Hexahydro-2,6-methano-3-benzazocines characterized by the presence of an alkanoyl or benzoyl group in the 6-position and a hydroxy or oxo group in the 1-position are analgesic agents and are prepared by treating the corresponding 1β-hydroxy-6-cyano compound with a Grignard-type reagent. Typical embodiments are 1β-hydroxy-3-methyl-6-acetyl-1,2,3,4,5,6-hexahydro-2,6-methano-3-benzazocine and 3,11β-dimethyl-6-propionyl-1β-hydroxy-8-methoxy-1,2,3,4,5,6-hexahydro-2,6-methano-3-benzazocines.

3,687,958

ARAKYL PENTA- AND HEXAMETHYENIMINE AND INTERMEDIATES THEREFOR

Janis Plostnieks, Philadelphia, Pa., assignor to McNeil Laboratories, Inc.

Division of Ser. No. 799,943, Feb. 17, 1969, Pat. No. 3,637,659, which is a continuation-in-part of Ser. No. 717,363, March 29, 1968, abandoned. This application Jan. 28, 1971, Ser. No. 110,616
Int. Cl. C07d *29/24*
U.S. Cl. 260—293.72 2 Claims

The compounds are of the class of aralkyl penta- and hexamethylenimines which are useful as anti-arrhythmic agents; and to certain intermediates useful in the syntheses of such methylenimines.

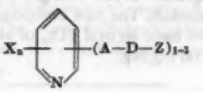
3,687,959

ALKARYL-ALKOXY, ARYL-AMIDO DERIVATIVES OF PYRIDINE

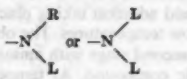
James Zielinski, Kenilworth, N.J., assignor to Esso Research and Engineering Company

Division of Ser. No. 664,944, Sept. 1, 1967, Pat. No. 3,535,328. This application May 28, 1970, Ser. No. 41,616
Int. Cl. C07d *31/44*
U.S. Cl. 260—295 AM 48 Claims

This disclosure relates to new mono- and poly-substituted pyridine derivatives, their methods of preparation and use as pesticides. A broad classification of preferred pyridine derivatives is characterized by the following formula:

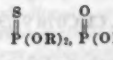


where *n* can be an integer of from 1 to 4, and wherein X and (A—D—Z) can occupy any ring position of from 2 to 6. X can be hydrogen, dialkylamino, alkylthio, halogen such as chlorine, fluorine, or iodine, amino, nitro, arylthio alkoxyl, phenoxyl, alkylamino, alkyl. Relative to the A—D—Z substituent, I. A can be O, NH, II. D can be any of the following: (a) $(CH_2)_{1-6}$, (b) $(CH_2)_nG(CH_2)_n$ where *n* is 1–6 and G is NR, O, S, SO, SO_2, and (c) an alkyl linkage having from one to six carbon atoms and a substituent (R) located at the terminal, or any adjacent, carbon atom; and III. Z can be: (1) a substituted amino group of the formula



where the L moiety may or may not be the same and is defined alternatively as

where M is S, or O and R′ is NHR, NR_2, OR, SR, haloalkyl (mono, di and tri), C_1–C_{12} alkyl and alkenyl (branched and unbranched), hydrogen, C_7–C_{10} cycloalkyl, phenyl and C_8–C_{12} alkenyl phenyl, or as



SOR, or SO_2R; (2) O – L [L being as in III(1)] except that A

cannot be oxygen; and (3) phenyl, substituted phenyl, alkenyl, alkynyl, haloalkyl. The moiety R wherever it appears above is meant to include any of the following: hydrogen, alkyl, cycloalkyl, aralkyl, aryl, alkenyl, alkynyl, carboxyl or substituted alkyl whose substituents are as defined by X_s above.

3,687,960

8-FLUORO-2-SUBSTITUTED-GAMMA-CARBOLINE

Edith Bernstein; David Lyon Garmaise, both of Montreal, Canada, and Nicholas Peter Plotnikoff, Lake Bluff, Ill., assignors to Abbott Laboratories, North Chicago, Ill.

Filed April 21, 1971, Ser. No. 136,194

Int. Cl. C07d *31/42*

U.S. Cl. 260—295 S **1 Claim**

2-(3-Hydroxypropyl)-8-fluoro-1,2,3,4-tetrahydro-5H-pyrido[4,3-b]indole has been found to be a powerful antidepressant when administered to warm-blooded animals.

3,687,961

8-FLUORO-2-[3-(4-FLUOROPHENYLANILINOPROPYL]-GAMMA-CARBOLINE

Edith Bernstein; David Lyon Garmaise, both of Montreal, Canada, and Nicholas Peter Plotnikoff, Lake Bluff, Ill., assignors to Abbott Laboratories, North Chicago, Ill.

Filed May 3, 1971, Ser. No. 139,902

Int. Cl. C07d *31/42*

U.S. Cl. 260—296 A **2 Claims**

8-Fluoro-2-[3-(4-fluorophenylanilino)propyl]-1,2,3,4,-tetrahydro-5H-pyrido[4,3-b]indole has been found to be a very useful tranquilizer at low dosages when administered to warm-blooded animals. The new compound and its non-toxic acid addition salts have an oral ED_{50} of about 20 mg./kg. and an oral LD_{50} of 700 mg./kg.

3,687,962

METHOD OF MAKING PYRROLE DERIVATIVES

Peter Rosenmund, Dornigheim, and Klaus Grubel, Julich, both of Germany, assignors to Friedrich-Karl Marcus, Geesthacht, Germany

Filed April 1, 1969, Ser. No. 812,301

Claims priority, application Germany, April 6, 1968, P 17 70 141.6

Int. Cl. C07d *23/06, 27/26*

U.S. Cl. 260—296 R **11 Claims**

Heterocyclic nitrogen compounds, especially aziridine and pyrrole derivatives, are formed by addition of organic acid chlorides at the carbon double bond of single-unsaturated hydrocarbon chlorinated at the carbon atom adjacent to the double bond, said addition taking place in the presence of a Lewis-acid at low temperatures. The obtained dichloroketone is reacted in a second stage with amines or ammonia to form the heterocyclic compound. At temperatures above 100° C pyrrole derivatives are obtained; below 100° C aziridine derivatives are formed. Heterocyclic nitrogen compounds with various substituents can be prepared from the correspondingly selected base substances.

3,687,963

THIAZOLO-(THIONO)PHOSPHORIC (PHOSPHONIC) ACID ESTERS

Hellmut Hoffmann, Wuppertal-Elberfeld; Ingeborg Hammann, and Wolfgang Behrenz, both of Cologne, all of Germany, assignors to Farbenfabriken Bayer Aktiengesellschaft, Leverkusen, Germany

Filed Aug. 13, 1970, Ser. No. 63,614

Claims priority, application Germany, Aug. 19, 1969, P 19 42 013.4

Int. Cl. C07d *91/32*

U.S. Cl. 260—302 E **11 Claims**

Thiazolo-(thiono)phosphoric (phosphonic) acid esters carrying a methyl group in the 4-position and a lower alkylmercapto- or a phenylmercapto- group in the 5 position of the thiazole ring, e.g. 0,0-dimethyl-0-[4-methyl-5-methyl-mercaptothiazol -(2)yl]-thionophosphoric acid or 0-methyl-0-[4-methyl-5-phenylmercaptothiazol-(2)yl]-methanephosphonic acid ester, which possess arthropodicidal, especially acaricidal and insecticidal, properties as well as fungicidal properties, and process for their production.

3,687,964

DYESTUFFS AND PROCESSES FOR THEIR PRODUCTION AND USE

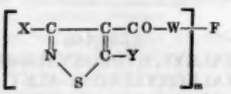
Karl-Heinz Schundehutte, and Kersten Trautner, both of Farbenfabriken Bayer AG, Cologne, Stemmheim, Germany

Continuation of Ser. No. 810,889, Jan. 16, 1969, abandoned, which is a division of Ser. No. 517,424, Dec. 29, 1965, Pat. No. 3,480,641, which is a division of Ser. No. 469,907, July 6, 1965, abandoned. This application June 1, 1971, Ser. No. 148,927

Int. Cl. C07d *91/32*

U.S. Cl. 260—303 **6 Claims**

Dyestuffs of the formula



wherein F is a radical of an organic dyestuff,

W is a bridge member, X and Y are halogen atoms, arylthio, or aryloxy, and *m* is an integer.

These dyestuffs are particularly suitable for dyeing textile materials containing nitrogen or hydroxyl groups, i.e., cellulose, wool, silk, synthetic polyamide, and polyurethane.

3,687,965

NOVEL 5-(N-SUBSTITUTED AMINOMETHYL)-2-OXAZOLIDINONES AND THEIR PROCESS OF PREPARATION

Claude P. Fauran, Paris; Claude J. Gouret, Meudon; Guy M. Raynaud, and Colette A. Douzon, both of Paris, all of France, assignors to S. A. Delalande, Regnault, France

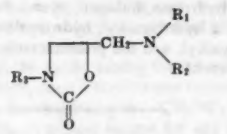
Filed Oct. 2, 1969, Ser. No. 863,354

Claims priority, application Great Britain, Oct. 22, 1968, 49,963/68

Int. Cl. C07d *85/28*

U.S. Cl. 260—307 C **7 Claims**

5-aminomethyl-2-oxazolidinones of the general formula:



(I)

in which:

represents either a dialkylamino radical in which the alkyl portions have one to five carbon atoms, or a heterocyclic amino radical which may be substituted by an alkyl radical having one to five carbon atoms or by a pyrrolidinocarbonylmethyl radical, and

R_3 represents a phenyl radical which may be substituted by one or more of the following radicals:
an alkoxy radical having one to five carbon atoms;

a halogen atom;
a trifluoromethyl radical, or
a carboxyl radical which may be esterified. The compound is made by reacting the corresponding 2-propanol derivative with ethyl carbonate. The compound possesses hypotensive, vasodilatatory, spasmolytic, sedative, myorelaxant, analgesic and anti-inflammatory properties.

3,687,966

O,O-DI-(C1–C2 ALKYL) S-[1-(C2—C20 ACYL) HYDANTOIN-3-YL]METHYL PHOSPHORTHIOATES

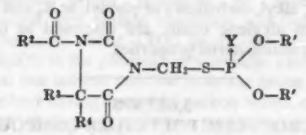
Albert H. Haubein, Newark, Del., assignor to Hercules Incorporated, Wilmington, Del.

Continuation-in-part of Ser. No. 694,861, Jan. 2, 1968, abandoned. This application Oct. 29, 1970, Ser. No. 85,298

Int. Cl. C07d *49/32*; C07f *9/06*

U.S. Cl. 260—309.5 **10 Claims**

Disclosed are compounds of the formula:



in which R^1 is CH_3 or C_2H_5, R^2 is C_1—C_{19} alkyl, R^3 and R^4 are H or CH_3, and Y is O or S. These compounds are highly toxic to insects.

3,687,967

α-DEHYDROBIOTIN SYNTHESIS

George Francis Field, West Caldwell; Leo H. Sternbach, Upper Montclair, and William Joseph Zally, Cresskill, all of N.Y., assignors to Hoffman-La Roche Inc., Nutley, N.J.

Filed Feb. 24, 1969, Ser. No. 801,770

Int. Cl. C07d *49/36*

U.S. Cl. 260—309.7 **34 Claims**

A process of producing α-dehydrobiotin from a 3,4-(2'-ketoimidazolido)-1,2-trimethylenethiophanium salt.

3,687,968

3-HYDROXYISOXAZOLE DERIVATIVES

Issei Iwai; Yukichi Kishida; Tetsuo Hiraoka, and Norio Nakamura, all of Tokyo, Japan, assignors to Sankyo Comapny Limited, Chyuo-ku, Tokyo, Japan

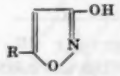
Division of Ser. No. 767,053, Oct. 1, 1968, Pat. No. 3,544,584, which is a continuation of Ser. No. 485,914, Sept. 8, 1965. This application March 5, 1970, Ser. No. 26,460

Claims priority, application Japan, Sept. 14, 1964, 39/52515; June 12, 1965, 40/34828

Int. Cl. C07d *85/22*

U.S. Cl. 260—307 H **1 Claim**

A process for preparing a compound having the formula



wherein R represents hydrogen; alkyl; unsubstituted or substituted phenyl; or dialkoxymethyl of from one to five carbon atoms in each alkoxy moiety, which comprises reacting a compound having the formula

$$R—C\equiv C—COOR'$$

wherein R is as defined above and R' represents alkyl of from one to five carbon atoms with hydroxylamine in the presence of an alkali metal hydroxide, the alkali metal hydroxide being used in an amount sufficient to maintain the reaction medium at an alkaline pH range.

3,687,969

9-AROYL-1,2,3,4-TETRAHYDROCARBAZOLE-3,3-DICARBOXYLIC ACIDS

Ernest John Alexander, East Greenbush, and Aram Mooradian, Schodack, both of N.Y., assignors to Sterling Drug Inc., New York, N.Y.

Filed June 2, 1970, Ser. No. 42,620

Int. Cl. C07d *27/68*

U.S. Cl. 260—315 **10 Claims**

Novel 9-aroyl-1,2,3,4-tetrahydrocarbazoles bearing a carboxy substituent at position 3 or 4 and corresponding esters having antiinflammatory activity, the preparation thereof and novel intermediates therefor are described.

3,687,970

Patent Not Issued For This Number

3,687,971

4-(PYRROLYL)-SALICYLIC ACID DERIVATIVES

Tsung-Ying Shen, Westfield, and Howard Jones, Holmdel, both of N.J., assignors to Merck & Co., Inc., Rahway, N.J.

Filed June 22, 1970, Ser. No. 48,479

Int. Cl. C07d *27/20*

U.S. Cl. 260—326.3 **3 Claims**

New salicyclic acid compounds, particularly 4-(heterocyclic)-salicylic acid derivatives and process for their preparation are claimed. The new 4-(heterocyclic)salicyclic acid compounds described have anti-inflammatory, anti-pyretic and analgesic activity.

3,687,972

AMINE DERIVATIVES OF 1,2-DIHYDROBENZ [cd] INDOLES

Thurairajah Padmanathan, Highland Park, N.J., assignor to American Cyanamid Company, Stamford, Conn.

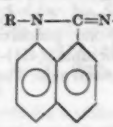
Filed Sept. 2, 1970, Ser. No. 69,115

Int. Cl. C07d *27/46*

U.S. Cl. 260—326.3 **5 Claims**

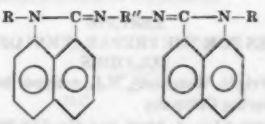
Amine derivatives of 1,2-dihydrobenz [cd] indoles, useful as disperse dyes for synthetic fibers are provided. They conform to the formula selected from

(I)



and

(II)



wherein R is hydrogen or methyl; R' is a monovalent aromatic radical selected from phenyl, naphthyl and biphenylyl; R'' is a divalent radical selected from phenylene, naphthylene, biphenylylene and sulfonylbisphenylene; said R' and R'' being either unsubstituted or substituted, the substituents of R' being selected from the group consisting of lower-alkoxy, lower-alkyl, lower-alkylsulfonyl, anilino, benzoyl, 4-carboethoxyphenylazo, carboxymethylcarbamoyl, chloro, lower-dialkylamino, lower-dialkylsulfamoyl, di-(2-carbamoylethyl)sulfamoyl, hydroxy, 2-hydroxyethyl, 4-(2-hydroxyethyl)phenylazo, 2-hydroxyethylsulphenoxy,

sulfamoyl and trifluoromethyl, the substituents of R'' being selected from the group consisting of chloro and methoxy; said compound being in the form of its free base of formula I and II, or hydrohalide salt thereof.

3,687,973

SUBSTITUTED-4-ANILINO PYRROLINES

George A. Cooke, Denville, N.J., and Rudolf G. Griot, Basel-Stadt, Switzerland, assignors to Sandoz-Wander Inc., Hanover, N.J.

Filed Oct. 30, 1969, Ser. No. 872,729
Int. Cl. C07d 27/14
U.S. Cl. 260—326.3 8 Claims

Substituted 4-anilino pyrrolines, e.g., 1-acetyl-4-(p-nitroanilino) 3-pyrroline-3-carboxylic acid ethyl ester, are prepared by treating corresponding 4-oxo-pyrrolines with an appropriate aniline. The compounds are useful as central nervous system depressants.

3,687,974

PROCESS FOR THE PREPARATION OF N-(4-CHLOROPHENYLTHIOMETHYL)-PHTHALIMIDE

Reimer Colln, Wuppertal-Elberfeld, Germany, assignor to Farbenfabriken Bayer Aktiengesellschaft, Leverkusen, Germany

Filed Aug. 13, 1970, Ser. No. 63,607
Claims priority, application Germany, Sept. 3, 1969, P 19 44 700.8
Int. Cl. C07d 27/52
U.S. Cl. 260—326 S 6 Claims

Reacting phthalimide methylol with 4-chlorothiophenol in the presence of concentrated sulfuric acid in an inert solvent immiscible with sulfuric acid at temperatures of 20° to 80° C. in a two-phase system, to form in high yield and purity N-(4-chlorophenylthiomethyl)-phthalimide which possesses fungicidal properties.

3,687,975

SUBSTITUTED DIBENZ[a,h]AZULENONES AND 8-(OXA OR THIA) SUBSTITUTED DIBENZ[a,h]AZULENONES

William J. Houlihan, 15 Raynold Road, Mountain Lakes, N.J., and Jeffrey Nadelson, Troy Hills Village, 1480 Route 46, Parsippany, N.J.

Filed May 14, 1970, Ser. No. 37,342
Int. Cl. A61k 27/00; C07d 67/00, 9/00
U.S. Cl. 260—327 B 4 Claims

Substituted dibenz[a,h]azulenones and 8-(oxa or thia) substituted dibenz[a,h]azulenones, e.g., 6,7-dihydro-benz[b]indeno[1,2-d]thiepin-8(8H)-one, prepared by treating a substituted spiro[1-benzoxa or thia-5(4H)-1'-isobenzofuran]-3'-one with concentrated mineral acid. The compounds are useful as anti-depressants.

3,687,976

PROCESS FOR THE PREPARATION OF CYCLIC SULFIDES

Franklin J. Wright, Watchung, N.J., assignor to Esso Research and Engineering Company

Filed Jan. 4, 1966, Ser. No. 518,704
Int. Cl. C07d 59/00
U.S. Cl. 260—327 E 19 Claims

High initial selectivities along with good conversions to episulfides are obtained by reacting epoxides in the vapor phase with COS or CS_2 in the presence of a solid catalyst selected from the group consisting of calcium and barium oxides, hydroxides and cyanamides and sodium, potassium and lithium hydroxides and sulfides. The highly reactive olefin episulfides formed in accordance with the instant invention, e.g., ethylene episulfide, and propylene episulfide, are active ingredients in various insecticides and fungicides and readily form polymers having useful properties as plastics.

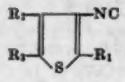
3,687,977

THIOPHENE-3-ISONITRILES

Robert Rippel; Walter Dittmar, both of Hofheim/Taunus, and Manfred Schorr, Frankfurt/Main, all of Germany, assignors to Farbwerke Hoechst Aktiengesellschaft, Frankfurt/Main, Germany

Filed Sept. 5, 1969, Ser. No. 855,726
Claims priority, application Germany, Sept. 23, 1968, P 17 93 471.3
Int. Cl. A61k 27/00; C07d 63/16
U.S. Cl. 260—332.2 C 5 Claims

Thiophene-3-isonitriles of the formula



(I)

in which R_1 is hydrogen, alkyl, carbalkoxy, cyano or phenyl, R_2 is hydrogen, alkyl, alkoxy, carbalkoxy, cyano or phenyl, R_3 is hydrogen, alkyl, carbalkoxy or phenyl, or R_2 and R_3 together represent an alkylene chain, are disclosed as having antimycotic and antibacterial properties.

3,687,978

MACROCYCLIC POLYETHER COMPOUNDS

Charles John Pedersen, Salem, N.J., assignor to E. I. du Pont de Nemours and Company, 2, Wilmington, Del.

Continuation-in-part of Ser. No. 588,302, Oct. 21, 1966, abandoned, which is a continuation-in-part of Ser. No. 358,937, April 10, 1964, abandoned. This application Aug. 6, 1969, Ser. No. 848,111
Int. Cl. C07d 15/00
U.S. Cl. 260—340.3 13 Claims

Macrocyclic polyether ("crown") compounds wherein the macrocyclic ring contains at least 14 carbon and oxygen atoms, each oxygen in the ring being separated from adjoining oxygens in the ring by two or three carbons; and the macrocyclic ring being fused to 1–4 other rings. These crown compounds find use as complexing agents, dye components, and gelation agents.

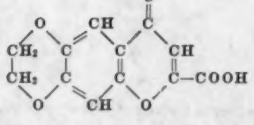
3,687,979

6,7-ETHYLENEDIORYCHROMONE-2-CARBOXYLIC ACID AND DERIVATIVES THEREOF

Arthur Hedley Wragg, Ashlands Middlewich Road, Cranage, Midland, Cheshire, England, assignor to Fisons Limited, London, England

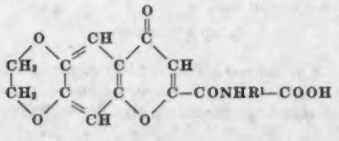
Division of Ser. No. 588,322, Oct. 21, 1966, Pat. No. 3,551,572, which is a continuation-in-part of Ser. No. 266,036, March 18, 1963, Pat. No. 3,291,811. This application Oct. 13, 1969, Ser. No. 871,099
Int. Cl. C07d 15/08
U.S. Cl. 260—340.3 7 Claims

This invention relates to chromone derivatives having the formula



(I)

and the formula



(II)

wherein R′ is selected from the group consisting of methylene, ethylene, isopropylene and propylene and physiologically acceptable salts, lower alkyl esters and amides with lower alkyl amines of each of the compounds of said two structural formulas wherein said lower alkyl groups have one to four carbon atoms. Said derivatives possess activity as inhibitors of the antigen-antibody reaction.

3,687,980

Patent Not Issued For This Number

3,687,981

PROCESS FOR MAKING A DIOXANE

Frederick R. Lawrence, Woodbury Heights, and Robert H. Sullivan, Woodbury, both of N.J., assignors to E. I. du Pont de Nemours and Company, Wilmington, Del.

Filed Jan. 17, 1968, Ser. No. 698,392
Int. Cl. C07d *15/04*; C07c *31/20*
U.S. Cl. 260—340.7 **20 Claims**

Trimethylene glycol produced by hydroformylating ethylene oxide with carbon monoxide and hydrogen under pressure between about 1,000 to 15,000 psig, preferably 3,000 to 6,000, in the presence of a metallic carbonyl catalyst and at least one solvent selected from the group consisting of aliphatic ethers having four to 16 carbon atoms, e.g., isopropyl ether, and halogen-containing aromatic and aromatic hydrocarbons each having six to 24 carbon atoms, e.g., bromobenzene or toluene, wherein the ratio by volume of ethylene oxide to solvent is within a range of from about 1:8 to 1:1 at a temperature of from about 100° to 130° C, preferably 110° to 120° C, to produce hydroxyethyl hydroxy dioxane and hydrogenating said dioxane to trimethylene glycol. Hydroformylating promoters, e.g., tertiary alcohols, can be used in the reaction in order to substantially increase the conversion of ethylene oxide to trimethylene glycol. Hydrogenation is conducted with any suitable hydrogenation catalyst, e.g., Raney nickel, and best results are obtained when the pH of the aqueous hydrogenation solution is slightly acidic, e.g., a pH of 2 to 6.9 and when hydrogenation is conducted first at 90° to 120° C for a predetermined period and then at 150° to 170° C until hydrogenation is substantially complete.

3,687,982

SEPARATION OF MIXED DIASTEREOISOMERS OF ZEARALANOL

Vernon V. Young, Terre Haute, Ind., assignor to Commercial Solvents Corporation, Terre Haute, Ind.

Filed March 9, 1971, Ser. No. 122,539
Int. Cl. C07d *9/00*
U.S. Cl. 260—343.2 F **17 Claims**

A mixture of the diastereoisomers of zearalanol is formed when zearalenone is catalytically reduced in the presence of hydrogen. Separation of the diastereoisomers can be effected by converting them to a mixture of their 6′-acetate esters, separating the 6′-acetate esters by fractional crystallization from a monohydric alkanol of one to five carbon atoms, e.g., from methanol, and de-esterifying the separated esters to yield separated zearalanol diastereoisomers.

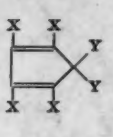
3,687,983

PROCESS FOR PREPARING HALOGENATED CYCLOPENTADIENE DIADDUCTS OF FURAN

James L. Dever, Lewiston, and Richard D. Carlson, Grand Island, both of N.Y., assignors to Hooker Chemical Corporation, Niagara Falls, N.Y.

Filed Aug. 4, 1969, Ser. No. 847,408
Int. Cl. C07d *5/44*
U.S. Cl. 260—346.2 M **9 Claims**

A process is described for reacting furan derivatives with substituted cyclopentadiene compounds of the following structure



wherein X is a halogen selected from the group consisting of chlorine, bromine, fluorine and Y is a substituent selected from the group consisting of chlorine, bromine, fluorine, alkyl or alkoxy of one to 10 carbon atoms and halogen substituted alkyl or alkoxy of one to 10 carbon atoms. The compounds are useful as fire retardant additives for various polymers.

3,687,984

Patent Not Issued For This Number

3,687,985

RED ANTHRAQUINONE DYES CONTAINING ESTER GROUPS

Karl Maier, Ludwigshafen, Germany, assignor to Badische Anilin- & Soda Fabrik Aktiengesellschaft Land Rhineland-Pfalz, Germany

Filed Sept. 5, 1969, Ser. No. 855,779
Claims priority, application Germany, Sept. 22, 1968, P 17 94 115.0
Int. Cl. C09b *1/54*
U.S. Cl. 260—376 **3 Claims**

Red 1-amino-4-hydroxyanthraquinone dyes which contain in the 2-position, attached by way of an oxygen atom, a hydrocarbon radical which in turn bears an esterified hydroxyl group. The dyes are particularly suitable for dyeing polyester textile material.

3,687,986

Patent Not Issued For This Number

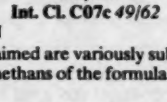
3,687,987

SUBSTITUTED CHALCOGENO DERIVATIVES OF TETRACYANOQUINODIMETHANS

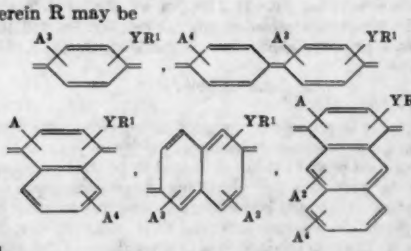
Elmore L. Martin, Wilmington, Del., assignor to E. I. du Pont de Nemours and Co.

Continuation-in-part of Ser. No. 514,385, Dec. 16, 1965, Pat. No. 3,504,001. This application April 7, 1969, Ser. No. 814,185
Int. Cl. C07c *49/62*
U.S. Cl. 260—396 N **15 Claims**

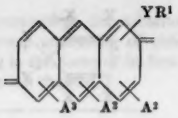
Described and claimed are variously substituted chalcogeno tetracyanoquinodimethans of the formula



wherein R may be



and



Y is oxygen or sulfur; and

R^1 and A — A^4 are any of numerous organic substituents.

The substituted tetracyanoquinodimethans of this invention, upon reaction with organic or organoinorganic Lewis bases, are converted to useful paramagnetic charge-transfer compounds; further, the compounds of this invention all form yellow complexes with aromatic compounds and are useful in dyeing polystyrene.

3,687,988

REACTION OF ACETIC ACID DERIVATIVES WITH ETHYLENE

Albert C. Chen, Highland Park; Stephen A. Butter, Boundbrook, both of N.J., and Richard W. Hobson, Albuquerque, N. Mex., assignors to Mobil Oil Corporation

Filed Nov. 18, 1970, Ser. No. 90,788

Int. Cl. C07c *53/00, 57/00*

U.S. Cl. 260—398 **11 Claims**

This specification discloses a process of reacting an acetic acid derivative with ethylene in the presence of a catalyst. The acetic acid derivatives include esters, the amide, substituted amides, and the anhydride of acetic acid. The catalyst is insoluble in the acetic acid derivatives, the ethylene, and the reaction products thereof and is an oxide of manganese wherein the manganese has a valence at least as great as 3. The catalyst, following the reaction, can be separated from the reaction mixture and regenerated by heating in the presence of an oxygen-containing gas. Thereafter, the regenerated catalyst may be employed further for the reaction of an acetic acid derivative with ethylene.

3,687,989

PROCESS FOR THE SELECTIVE HYDROGENATION OF FATS AND FATTY ACIDS

Josef Baltes, 2 Hamburg 22, Hagenau 50, Germany

Filed May 27, 1969, Ser. No. 828,383

Claims priority, application Germany, June 4, 1968, P 17 67 675.4

Int. Cl. C11c *3/12*

U.S. Cl. 260—409 **10 Claims**

Fats and fatty acids containing diene, triene or polyene fatty acid residues or containing cis monoene residues are hardened or decolorized by hydrogenating them in the presence of a nickel sub sulfide alone or together with molybdenum and/or tungsten sulfides to form a product having a substantial amount of trans monoene residues.

3,687,990

ISOPRENOID COMPOUNDS AND A PROCESS FOR PRODUCING THE SAME

Hugo Gutmann, Reinach; Roman Marbet, Riehen, and Ulrich Schwieter, Reinach, all of Switzerland, assignors to Hoffmann-La Roche Inc., Nutley, N.J.

Division of Ser. No. 610,218, Jan. 19, 1967, Pat. No. 3,489,806. This application July 1, 1969, Ser. No. 838,305

Claims priority, application Switzerland, Jan. 28, 1966, 1232/66

Int. Cl. C08h *17/36*

U.S. Cl. 260—413 **3 Claims**

Aliphatic isoprenoid compounds having two terminal ether linkages and compounds produced by hydrolysis, acylation, hydrogenation, and oxidation of said isoprenoid compounds including processes for producing these compounds. The isoprenoid compound is produced by reacting an ether of 3-methyl-pent-3-en-1-yne with an alkyl ether of 2-methyl-acrolein. These compounds are intermediates in the production of C_{20} dialdehyde pigments.

3,687,991

AZOMETHINE METAL COMPLEX DYES

Manfred Gaeng, Bobenheim-Roxheim, and Peter Dimroth, Ludwigshafen, both of Germany, assignors to Badische Anilin- & Soda-Fabrik Aktiengesellschaft, Land Rheinland-Pfalz, Germany

Filed Feb. 16, 1971, Ser. No. 115,829

Claims priority, application Germany, Feb. 20, 1970, P 20 07 844.8

Int. Cl. C07j *3/08, 3/06, 15/00*

U.S. Cl. 260—429 C **2 Claims**

Metal-containing azomethine pigment dyes derived from 1 mole of an o-phenylenediamine and 2 moles of a β-hydroxynaphthaldehyde which are useful for coloring printing inks, surface coatings, resins and the like.

3,687,992

SOLID NITRILOTRIACETATE-METAL COMPLEXES

William A. Feiler, Kirkwood, Mo., and Chung Yu Shen, St. Louis, Mo., assignors to Monsanto Company, St. Louis, Mo.

Filed Sept. 29, 1969, Ser. No. 862,070

Int. Cl. C07j *13/00, 1/08*

U.S. Cl. 260—429 R **6 Claims**

Solid nitrilotriacetate (NTA) - metal complexes having a metal to NTA molar ratio of more than 1.5 to 1, the metal being copper or manganese, are useful as micronutrients for plants and as catalysts in oxidation reactions. The solid complexes are prepared by reaction of a slurry of the metal salts with NTA in the molar ratio of 1:2 followed by drying. A small amount of mineral acid is an effective stabilizer for the solid complexes.

3,687,993

GOLD HYDROXYDIACETATE AND PROCESS FOR ITS MANUFACTURE

Lothar Heinz Hornig, deceased, late of Frankfurt am Main in Schwanheim, Germany (by Anneliese Hornig, nee Munich, co-heiress), and Hans-Jurgen Arpe, Fischbach, Taunus, Germany, assignors to Farbwerke Hoechst Aktiengesellschaft, Frankfurt am Main, Germany

Continuation-in-part of Ser. No. 786,541, Dec. 5, 1968, abandoned. This application July 29, 1971, Ser. No. 167,431

Claims priority, application Germany, Dec. 12, 1967, P 16 68 057.2

Int. Cl. C07f *1/12*

U.S. Cl. 260—430 **7 Claims**

Solid gold hydroxydiacetate of the formula $Au(OH)(O_2CCH_2)_2$ which is well suitable as catalyst or catalyst component for oxidation reactions. The novel compound can be obtained by preparing an aqueous solution containing gold ions and acetate ions, removing the solvent, dissolving the residue obtained in a polar solvent precipitating the gold hydroxydiacetate by adding a non polar solvent and isolating it.

3,687,994

METHOD OF MANUFACTURING ALKYLALUMINUM COMPOUNDS

Paul Kobetz, Baton Rouge, La., and Warren E. Becker, Baton Rouge, La., assignor to Ethyl Corporation, New York, N.Y.

Continuation-in-part of Ser. No. 42,555, June 1, 1970, abandoned, which is a division of Ser. No. 860,097, Sept. 22, 1969, Pat. No. 3,535,108, which is a continuation-in-part of Ser. No. 653,622, July 17, 1967, abandoned. This application Dec. 16, 1970, Ser. No. 98,954

Int. Cl. C07f *5/06*

U.S. Cl. 260—448 A **41 Claims**

A method of manufacturing alkylaluminum compounds from ternary or quaternary alloys, comprising as principal elements aluminum, silicon and titanium, and aluminum, silicon, titanium and iron, respectively, wherein said alloys are reacted with hydrogen and an aluminum alkyl. An olefin and/or a catalyst may also be added in the reaction.

3,687,995

ORGANOSILICON COMPOUNDS

David Andrew Jonas, Arranmore, Brynna Road, Pencoed, and William John Owen, 21 Nailsea Court, Sully, Penarth, both of Glamorgan, Wales

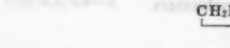
Claims priority, application Great Britain, Nov. 17, 1969, 56161/69

Filed Nov. 17, 1970, Ser. No. 90,462

Int. Cl. C07f 7/04, 7/18

U.S. Cl. 260—448.8 R 3 Claims

Novel silacyclobutanes of the formula



in which R is hydrogen or an alkyl radical having less than 7 carbon atoms and R′ represents an alkoxy radical having less than 5 carbon atoms or an amino radical. They are useful as cross-linking agents and intermediates for organosilicon polymers.

3,687,996

PROCESS FOR THE PRODUCTION OF OCTAHYDRO-1,2,4-METHENOPENTALENYL-(5)EXO-ISOCYANATE

Claus Dieter Weis, 43, Hotmattweg, Arlesheim, Basel, Switzerland, and Alain Claude Rochat, 21, Bettingerstrasse, Birsfelden near Basel, Switzerland

Filed June 16, 1969, Ser. No. 833,773

Int. Cl. C07c 119/04

U.S. Cl. 260—453 P 6 Claims

Novel process for the preparation of octahydro-1,2,4-methenopentalenyl-(5)exo-isocyanate comprising reacting an exo-endo isomer mixture consisting substantially of the exo isomer of a lower alkoxyalkyl octahydro-1,2,4-methenopentalene-5-carboxylate with hydrazine to obtain the corresponding carboxylic acid-hydrazide, freeing this of the endo isomer content by recrystallization from lower haloalkanes, then converting the acid hydrazide thus purified, with nitrous acid into the acid azide and decomposing this with heat.

3,687,997

ETHYL N-CYCLOHEXYL N-PROPARGYL-THIOLCARBAMATE AS A HERBICIDE

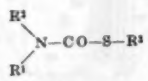
Karl Kiehs, 4 Sudermannstrasse, 6700 Ludwigshafen; Karl-Heinz Koenig, 8a Pierstrasse, 6710 Frankenthal, and Adolf Fischer, 43 Speyererstrasse, 6704 Mutterstadt, all of Germany

Filed March 27, 1969, Ser. No. 811,226

Int. Cl. C07c 155/08

U.S. Cl. 260—455 A 1 Claim

New and valuable substituted thiolcarbamates having the formula



in which R^1 denotes a propargyl, cyanomethyl, β-cyanoethyl or β-chloro-β-cyanoethyl radical and R^2 has the same meanings as R^1, R^1 and R^2 being identical or different, and R^3 may also denote a phenyl or cyclohexyl radical or an aliphatic radical having not more than six carbon atoms which may bear hydroxyl, chloro or thiocyano, lower alkoxythioether or lower alkylthioether groups as substituents and R^3 denotes an aliphatic radical which may be substituted by halogen atoms. These compounds are effective herbicidal active ingredients which are particularly suitable for controlling unwanted grassy plants while leaving crop plants undamaged.

3,687,998

ALIPHATIC SULFONOXYPHENYLUREAS

Robert D. Trepka, 2501 Hudson Road, St. Paul, Minn.

Filed Dec. 16, 1968, Ser. No. 784,251

Int. Cl. C07c 143/68

U.S. Cl. 260—456 A 11 Claims

This invention relates to aliphatic sulfonoxyphenylureas. These compounds may be utilized to destroy and/or prevent unwanted plant growth. Compositions containing and processes for preparing the compounds of the present invention are described.

3,687,999

INHIBITION OF COLOR FORMATION DURING SULFATION OF ETHOXYLATED ALCOHOLS AND ALKYL PHENOLS

Brij J. Kapur, 325 E. 18th St., Paterson, N.J., and Marvin L. Mausner, 531 Cumberland Ave., Teaneck, N.J.

Filed Nov. 14, 1969, Ser. No. 877,016

Int. Cl. C07c 141/02

U.S. Cl. 260—458 3 Claims

Light-colored sulfates of ethoxylated long chain aliphatic alcohols and of ethoxylated alkylphenols are produced by carrying out the sulfation, using sulfur trioxide dissolved in liquid sulfur dioxide as the sulfating agent, in the presence of small amount of a borohydride such as sodium borohydride.

3,688,000

Patent Not Issued For This Number

3,688,001

CARBONATES CONTAINING HALOGENATED NEOPENTYL GROUPS

Jurgen H. Exner; Eric R. Larsen, and Jeffrey A. Gunsher, all of Midland, Mich., assignors to The Dow Chemical Company, Midland, Mich.

Filed Aug. 3, 1970, Ser. No. 60,778

Int. Cl. C07c 69/00; C08g 51/58, 39/02

U.S. Cl. 260—463 7 Claims

New halogenated aliphatic carbonates containing halogenated neopentyl groups have been found which are extremely useful as fire retardant additives for polyesters.

3,688,002

PROCESS FOR PRODUCING ACRYLONITRILE OR METHACRYLONITRILE

Keisho Yamada; Sumio Umemura; Kyoji Ohdan, all of Ube; Mikio Hidaka, Shimonoseki; Kazuo Fukuda, and Masao Sawazi, both of Ube, all of Japan, assignors to Ube Industries, Ltd., Yamaguchi-ken, Japan

Filed July 9, 1970, Ser. No. 53,636

Int. Cl. C07c 121/32, 121/02

U.S. Cl. 260—465.3 7 Claims

Acrylonitrile or methacrylonitrile of high purity is prepared with good selectivity by ammoxidation of propylene or isobutylene at 350—600°C. using a solid oxidation catalyst consisting essentially (A) bismuth antimonate having an antimony-bismuth atomic ratio of about 1 : 1 and (B) a salt of molybdic acid with a metal of Group Ib, IIa, IIb or VIII of the periodic table, manganese, lead or tin, for example barium molybdate, calcium molybdate, zinc molybdate and iron molybdate, in which the weight ratio of bismuth antimonate (A) to molybdate (B) is from 95 : 5 to 10 : 90.

3,688,003

PROCESS FOR THE CONTINUOUS PRODUCTION OF 1,4-DICYANO-2-BUTENE

Peter Kurtz, Leverkusen, and Herbert Schwarz, Opladen, both of Germany, assignors to Farbenfabriken Bayer Aktiengesellschaft, 3, Leverkusen, Germany

Filed Sept. 21, 1970, Ser. No. 73,750

Claims priority, application Germany, Sept. 25, 1969, P 19 48 460.7

Int. Cl. C07c *121/20*

U.S. Cl. 260—465.8 R **5 Claims**

Continuous process for the production of 1,4-dicyano-2-butene wherein 1,4-dichloro-2-butene and/or 1,2-dichloro-3-butene are reacted with hydrocyanic acid in the presence of copper-I-salts, said reacting being effected so that dichlorobutene is continuously introduced into the first vessel of the cascade while an aqueous sodium cyanide solution containing a copper-I-salt is continuously introduced into each vessel of the cascade.

3,688,004

Patent Not Issued For This Number

3,688,005

5-HALO-BICYCLO[2,2,2]OCT-2-ENE-1,4-DICARBOXYLIC ACID

Seemon H. Pines, 24 Candlewood Drive, Murray Hill, N.J.

Filed March 13, 1969, Ser. No. 807,082

Int. Cl. C07d *61/28*; C07c *69/74*

U.S. Cl. 260—468 B **3 Claims**

A new class of 1,4,5 (or 6)-trisubstituted bicyclo[2,2,2]Oct-2-ene compounds are prepared by reacting a 1,4-disubstituted 2,3-dihydrobenzene with a substituted vinyl compound. The derivatives are polycarboxylic acids, or can be hydrolyzed to polycarboxylic acids, and are suitable for use in condensation polymers such as polyamides and polyesters.

ERRATA

For Classes 423—243, 423—594, 423—178, 423—314, 423—109, 423—548, 423—384, 423—488, 423—242, 423—468, 423—271, 423—578, and 423—244 see:
Patents Nos. 3,687,613 through 3,687,630, inclusive
For Classes 423—6 and 423—342 see:
Patents Nos. 3,687,641 and 3,687,642

ELECTRICAL

3,688,006

DEVICE FOR CRUCIBLE-FREE, FLOATING-ZONEMELTING A CRYSTALLINE MEMBER

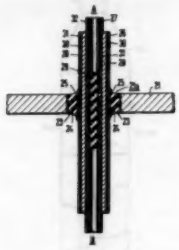
Wolfgang Keller, Pretzfeld, Germany, assignor to Siemens Aktiengesellschaft, Berlin and Munich, Germany

Filed March 27, 1970, Ser. No. 23,357

Claims priority, application Germany, March 29, 1969, P 19 16 318.9

Int. Cl. F27d *11/06*; H05b *5/08*

U.S. Cl. 13—1 **3 Claims**



Device for zone melting a crystalline member includes a vessel, an electrically energizable heating device mounted in the vessel for heating a melting zone formed in a crystalline member, and an electric current supply for the heating device extending into the vessel through an opening formed in a wall of the vessel, the supply comprising at least two conductors insulated from one another by an intermediate layer of insulating material having a Shore hardness in the range of 10 to 100 and an extensibility of at least 20 percent, a gas-tight adhesive connection being provided between the intermediate layer of insulating material and the surface of the conductors.

3,688,007

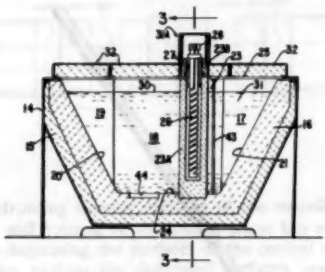
METAL MELTING AND HOLDING FURNACE

John Patrick McKenna, Watertown, Wis.; Richard J. Keeling, Lombard, Ill., and Duane H. Lauersdorf, Watertown, Wis., assignors to Sala Basic Industries, Inc., Milwaukee, Wis.

Filed Nov. 3, 1970, Ser. No. 86,407

Int. Cl. H05b *3/44*; F27d *11/02*

U.S. Cl. 13—20 **8 Claims**



A metal melting and holding furnace having an immersion-type heating unit extending into the furnace body and arranged to provide limited access between the receiving and ladling zones.

3,688,008

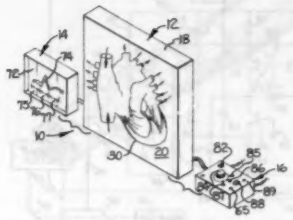
VISUAL DISPLAY UNIT

Robert G. Krieger, Sr., Burlington, N.C., assignor to Bobbitt Laboratories, Burlington, N.C.

Filed May 25, 1970, Ser. No. 40,041

Int. Cl. G09b *23/32*

U.S. Cl. 35—17 **2 Claims**



A visual display unit adapted to graphically create the illusion of flow through a biological image such as the heart or nervous system. The illusion of flow is created by means of one or more rows of lamps which are adapted to be lighted in sequence along the rows. The rows are mounted behind a translucent panel on which the image is carried, and are positioned in a predetermined relationship with respect to the image so as to accurately reflect the flow pattern through the image. Thus when the flashing lamps are viewed through the image, the flow pattern will be apparent to the observer. Where more than one row of lamps is employed, means may be provided for independently actuating each row whereby different flow patterns may be illustrated.

3,688,009

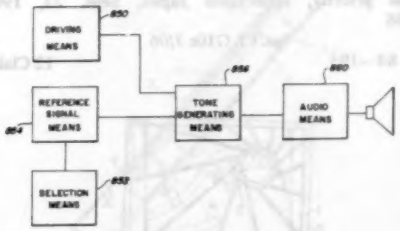
MUSICAL DEVICE FOR AUTOMATICALLY PRODUCING TONE PATTERNS

William Wangard, Maywood, Ill., assignor to The Seeburg Corporation of Delaware, Chicago, Ill.

Filed Nov. 13, 1970, Ser. No. 89,363

Int. Cl. G10f *1/00*

U.S. Cl. 84—1.03 **15 Claims**

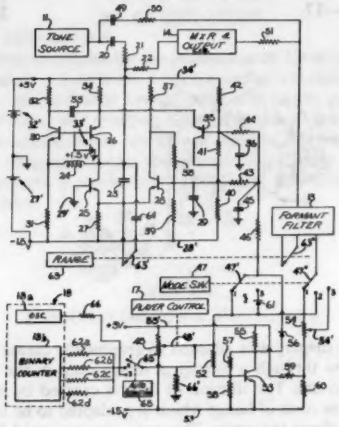


Electronically produced pulses are conveyed in predetermined patterns to a tone signal generator for producing a plurality of tone signals which in turn produce a plurality of musical tones, each being different from but related to the others. A tone signal means with multiple frequency controlling means connected to one or more oscillators is provided to vary the tone patterns which are dependent on selection by an instrumentalist. The tone signal means feeds an audio circuit for producing the musical tones.

3,688,010
TONE MODULATION SYSTEM

Alfred B. Freeman, 20418 Seaboard Road, Malibu, Calif.

Continuation-in-part of Ser. No. 835,506, June 23, 1969, abandoned. This application June 11, 1970, Ser. No. 65,569
Int. Cl. G10h *3/00*
U.S. Cl. 84—1.11 13 Claims

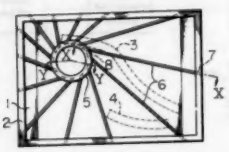


Musical tone signals in electrical form are applied to a plurality of formant filters which are tuned dynamically by player operated controls and by electronically generated control signals. Control signal shaping networks or special potentiometer controls are switched in a number of ways to produce different formant frequency response patterns including one similar to that of the human vocal tract producing dipthongs. The disclosure includes filters which are responsive in tuning to a control voltage and filters in which both inductive and capacitive components are varied for tuning so a nearly constant Q is maintained over wide tuning ranges.

3,688,011
SOUNDBOARD

Kinya Yamamoto, 10-13, 2-chome, Hon-cho, Koganei City, Tokyo, Japan

Filed Sept. 17, 1970, Ser. No. 73,019
Claims priority, application Japan, Sept. 22, 1969, 44/75386
Int. Cl. G10c *3/06*
U.S. Cl. 84—195 12 Claims

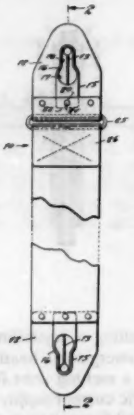


A soundboard for musical instruments and sound systems for improving tone quality and balance in resonance over a wide range of pitch. The soundboard has sound bars spirally or convolutely arranged, that is, in a fashion such that the inner ends of a plurality of bars are tangent to a circle at a suitable position on the soundboard and the other ends of the bars are fixed to the edge frame of the soundboard. The effect of the spiral arrangement of sound bars is further improved by providing an annular rib at the center of the spirally arranged sound bars so that the rib secures the ends of the bars onto the soundboard. The effect is still further improved by providing one or more tunnel-like channels in the part of the annular rib that contacts the soundboard.

3,688,012
GUITAR SAFETY STRAP

Richard Vettel, 2392 Valentine Ave., Bronx, N.Y.

Filed March 16, 1971, Ser. No. 124,820
Int. Cl. G10d *3/00*; G10g *5/00*
U.S. Cl. 84—327 2 Claims



A strap for supporting a guitar around a neck and shoulders of a musician, the strap including a metal reinforcing member at the button holes thereof so to prevent accidental disengagement of the guitar strap button from the strap button holes, the reinforcing member including a central opening that aligns with the button hole so to be also engaged by the guitar strap button.

3,688,013
DRUM STICK

Aldor A. Menard, 462 Goldthwaite Road, Whitinsville, Mass.

Filed July 12, 1971, Ser. No. 161,567
Int. Cl. G10d *13/00*
U.S. Cl. 84—422 6 Claims

A drum stick having a flexible element attached to the stick adjacent its head, the flexible element having a head attached to its free end.

3,688,014

METHOD AND APPARATUS FOR DRIVING A ROD OR A PIPE, MORE PARTICULARLY AN EARTH ELECTRODE, INTO THE GROUND

Gijsbert Versteeg, 55, Stationslaan, Nunspeet, Netherlands

Filed April 6, 1970, Ser. No. 25,977

Claims priority, application Netherlands, April 18, 1969, 69.06079

Int. Cl. H01r 3/06

U.S. Cl. 174—7 2 Claims

An earth electrode assembly which is driven into the earth. The electrode comprises an elongated section and a tip portion which is rotatably mounted on the elongated section. The tip portion has blades which rotate the tip around its axis as it is driven into the ground.

3,688,015

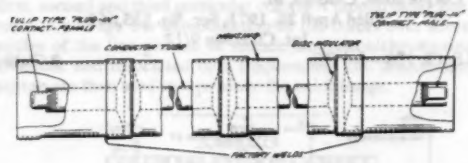
CONDUCTIVE ALUMINUM TUBES FOR METAL-ENCLOSED, COMPRESSED GAS-INSULATED CONDUCTORS AND THE LIKE

Howard W. Graybill, 3015 McClellan Drive, Greensburg, Pa.

Division of Ser. No. 138,094, April 28, 1971. This application Jan. 14, 1972, Ser. No. 217,829

Int. Cl. H01b 9/04

U.S. Cl. 174—16 B 2 Claims



The confronting interior surfaces of the metallic central conductor and housing of an isolated phase bus system are treated by degreasing the surfaces of the central conductor and housing, etching the degreased surfaces, washing the etched surfaces, contacting the washed surfaces with an oxidizing agent, washing the resulting surfaces and drying the resulting treated surfaces under dust-free conditions. The process provides surfaces which are devoid of all particles which can deteriorate or otherwise destroy the dielectric integrity of the isolated phase bus while at the same time having surfaces of higher coefficients of emissivity as compared with conventional untreated surfaces thereby reducing the operating temperatures of the bus run.

3,688,016

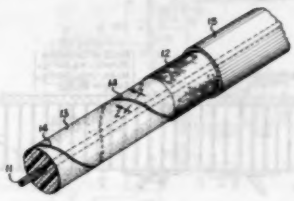
COAXIAL CABLE

Robert L. Spade, St. Charles, Ill., assignor to Belden Corporation, Chicago, Ill.

Filed Oct. 19, 1971, Ser. No. 190,514

Int. Cl. H01b 11/18

U.S. Cl. 174—36 8 Claims



A coaxial cable is described wherein a rigid expanded foam insulator fills the space between inner and outer conductors. Groove means are formed in the outer surface of the insulator to a depth sufficient to enable the insulator to flex with the inner and outer conductors.

3,688,017

INSULATING MEANS SUITABLE FOR USE IN HANDLING HIGH VOLTAGE POWER LINES

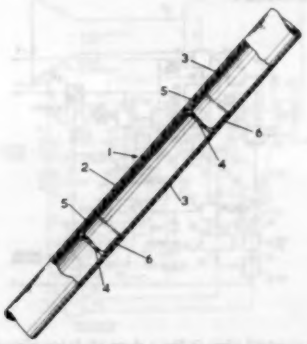
Philip Stanley Roots, Godalming, England, assignor to St. Bernard Plastics Limited, Farnborough Hampshire, England

Filed April 15, 1971, Ser. No. 134,285

Claims priority, application Great Britain, April 16, 1970, 18,328/70

Int. Cl. B25g 1/00

U.S. Cl. 174—46 5 Claims

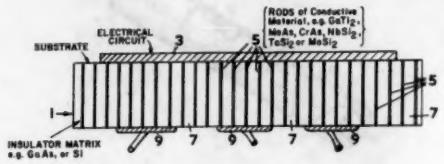


Insulating means in the form of a rod to which tools can be attached for handling high voltage power lines. The rod is provided by a tube of insulating material which in its interior is divided into separate chambers or compartments by hollow pot members which are closed at one end and fit together within the tube.

3,688,018
ELECTRICAL DEVICE SUBSTRATES

Stephen Edward Ralph Hiscocks, Malvern, England, assignor to Minister of Technology in Her Britannic Majesty's Government of the United Kingdom of Great Britain and Northern Ireland, 3, Millbank, London, S.W. 1, England

Filed July 27, 1970, Ser. No. 58,578
Claims priority, application Great Britain, July 30, 1969, 38,241/69
Int. Cl. H05k 1/18
U.S. Cl. 174—68.5 16 Claims


RODS of Conductive Material, e.g. GeTi2, MoAs, CrAs, NbSi2, TaSi2 or MoSi2
ELECTRICAL CIRCUIT
SUBSTRATE
INSULATOR MATRIX e.g. GaAs, or Si

An electrical substrate including a plurality of rods of a conducting material embedded in a matrix of an insulating material, the rods extending in the same general direction as each other between two major faces of the substrate.

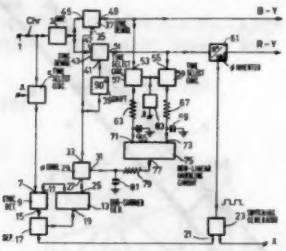
ERRATUM

For Class 178—88 see:
Patent No. 3,688,039

3,688,019
DEMODULATOR CIRCUIT FOR COLOR TELEVISION-RECEIVER

Fritz Weitzsch, and Erich Eduard Walther, both of Hamburg, Germany, assignors to U.S. Philips Corporation, New York, N.Y.

Filed Jan. 23, 1970, Ser. No. 5,207
Claims priority, application Germany, Dec. 18, 1969, P 19 63 464.1
Int. Cl. H04n 9/46
U.S. Cl. 178—5.4 SY 12 Claims

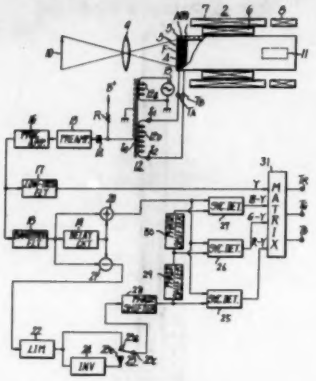


A phase control circuit for a demodulator circuit for a PAL receiver, wherein with the aid of the output signals of two synchronous demodulators each of which signals of two synchronous demodulators each of which demodulate a quadrature component from the PAL chrominance signal a phase correction signal dependent on the differential phase error is obtained after filtering and multiplication, division or similar non-linear handling for the purpose of correcting the phase of the axes of the PAL chrominance signal to be demodulated relative to that of the chrominance subcarrier signal to be used for the synchronous demodulation.

3,688,020
COLOR TELEVISION CAMERA INDEXING APPARATUS

Yasuharu Kubota, Kanagawa, Japan, assignor to Sony Corporation, Tokyo, Japan

Filed Sept. 16, 1970, Ser. No. 72,593
Claims priority, application Japan, Sept. 18, 1969, 44/74175; March 31, 1970, 45/27614; March 31, 1970, 45/27615; March 31, 1970, 45/27616
Int. Cl. H04r 9/06
U.S. Cl. 178—5.4 ST 26 Claims

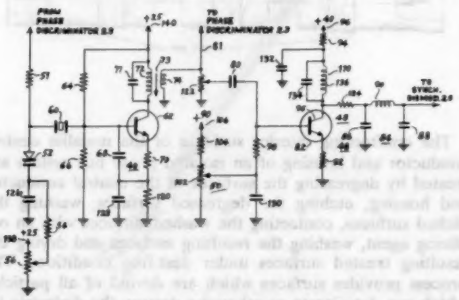


A color television camera utilizing a vidicon tube that has a filter in the form of alternate stripes for the primary colors red, green and blue, a pair of electrodes for each set of three stripes and a photoconductive layer, an alternating voltage is applied to the electrodes to provide a predetermined pattern on the surface of the photoconductive layer in the form of an index signal which is overlapped on the photoconductive layer with the image to be reproduced. The composite signal on the photoconductive layer of an index signal and a color video signal is fed through the same terminals that applied the reference alternating voltage to the electrodes to a circuit which separates the color video signal from the index signal. The index signal is then applied to three demodulators to obtain the color video signals.

3,688,021
TINT CONTROL

Roy A. Ekstrand, Prospect Heights, Ill., assignor to Admiral Corporation, Chicago, Ill.

Filed April 20, 1971, Ser. No. 135,663
Int. Cl. H04n 9/12
U.S. Cl. 178—5.4 HE 9 Claims



A tint control circuit for a color television receiver is described. The hue of the image reproduced on the screen is controlled by a limiting circuit which is incorporated in a

transistor amplifier for supplying a reference signal to the color demodulators. The phase of the reference signal is changed, thereby changing the hue, by varying the amount of limiting in the amplifier. The limiting circuit comprises a bias control potentiometer which controls the bias of the transistor and thereby the degree of limiting of the amplifier.

3,688,022

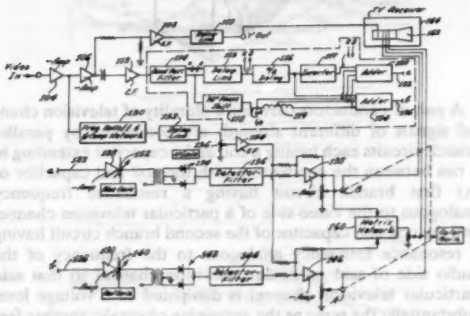
CROSSTALK REDUCTION IN COLOR REPRODUCTION SYSTEM

Daniel J. Marshall, San Pedro, Calif., assignor to The Magnovox Company, Torrance, Calif.

Filed April 22, 1971, Ser. No. 136,502

Int. Cl. H04n 9/06

U.S. Cl. 178—5.4 ST **23 Claims**



An improvement in a system for reproducing a color image where the composite black-and-white image is formed either on an exposure or is formed from a live image. In either case, modulations are provided in first and second particular line patterns to obtain representations of first and second particular colors. The third color may be unmodulated or modulations may also be provided in a third particular line pattern different from the first and second particular line patterns to obtain a representation of the third particular color. The three colors add optically to form the image luminance.

To reproduce the color image, signals are provided by scanning the composite image. Means are provided for operating upon such signals in accordance with the modulations in the first and second particular line patterns and the third particular line pattern if such is provided or the unmodulated signal if such is provided to produce signals representing the first, second and third particular colors. A tapped delay line is used to average the demodulation of the colors over several cycles of the line pattern to reduce luminance/chrominance crosstalk and associated beat frequencies. The demodulated signals are then used to reproduce the color image.

3,688,023

COLOR TELEVISION CAMERA

Hiromichi Kurokawa, and Yasuharu Kubota, both of Kanagawa, Japan, assignors to Sony Corporation, Tokyo, Japan

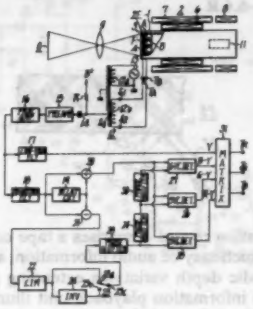
Filed April 26, 1971, Ser. No. 137,334

Claims priority, application Japan, April 29, 1970, 45/36661

Int. Cl. H04n 9/06

U.S. Cl. 178—5.4 ST **9 Claims**

A color television camera comprises an image pickup tube having a photoconductive layer for the photoelectric conversion of images projected thereon into an electrical output, a color filter for forming a color separated image of an object to be televised on the photoconductive layer, and an electrode arrangement through which an index image can be electrically produced on the photoconductive layer to provide in the tube output an index signal as well as a color video signal corresponding to the color separated image, such electrode arrangement including a first continuous transparent conductive layer and a second transparent conductive layer in the form of spaced stripes on the first transparent conductive layer and



electrically insulated from the latter, with the photoconductive layer contacting the electrode arrangement at the stripes of the second transparent conductive layer and at the areas of the first transparent conductive layer between such stripes.

3,688,024

COLOR TELEVISION DISPLAY DEVICE WITH INDEX TYPE CATHODE RAY TUBE

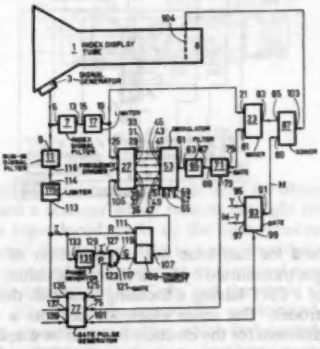
Pieter Marinus Van Den Avoort, and Lieuwe Terpstra, both of Emmasingel, Eindhoven, Netherlands, assignors to U.S. Philips Corporation, New York, N.Y.

Filed May 1, 1970, Ser. No. 33,744

Claims priority, application Netherlands, May 9, 1969, 6907098

Int. Cl. H04n 9/24

U.S. Cl. 178—5.4 F **5 Claims**



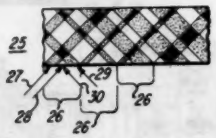
A color television picture display device including an indexing tube and a frequency divider circuit for related indexing wherein a run-in circuit of this frequency divider circuit includes a trigger circuit so as to avoid phase uncertainty which trigger circuit establishes the end of the run-in signal applied to the frequency divider circuit always after one full period thereof and wherein consequently a digital frequency divider circuit may be used fruitfully.

3,688,025

RECORDER AND PLAYBACK APPARATUS FOR PULSE WIDTH MODULATED RECORD

Maurice James Whittemore, Jr., New Palestine, Ind., assignor to RCA Corporation

Filed Oct. 27, 1970, Ser. No. 84,356
Int. Cl. G11b 11/18; H04n 5/86
U.S. Cl. 178—6.6 R 12 Claims



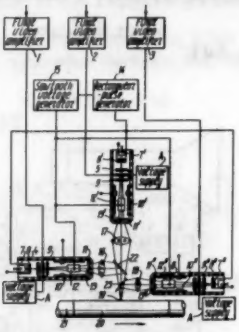
An information record comprises a tape containing the information, which may be audio information, as width modulation of periodic depth variations extending generally across the tape. An information playback unit illuminates the tape and detects the information which is contained in light diffracted by the tape.

3,688,026

METHOD AND SYSTEM FOR THE DOT-PATTERN RECORDING OF HALF-TONE IMAGES

Valentin Vladimirovich Odnolko, and Vladimir Aronovich Uzilevsky, both of Leningrad, U.S.S.R., assignors to Leningradsky elektrotekhnichesky Institut Svyazi im eni Professora M. A. Bonch-Bruevicha, U.S.S.R., Leningrad Maika

Continuation-in-part of Ser. No. 74,524, Sept. 22, 1970, abandoned, which is a continuation-in-part of Ser. No. 750,535, Aug. 6, 1968, abandoned. This application Oct. 29, 1970, Ser. No. 85,179
Int. Cl. H03n 1/24
U.S. Cl. 178—6.7 5 Claims



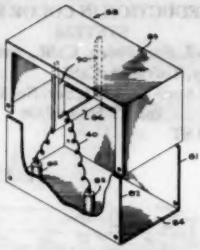
A method for half-tone dot reproduction of continuous-tone images transmitted by facsimile or television, wherein use is made of a CRT having a focusing lens with three consecutive electrodes. The inner electrode accepts a video-signal voltage sufficient for the electron beam to be diaphragmed. As a result, the light spot appearing on the CRT screen varies in area from a finite size to zero. The method disclosed herein serves as the basis for an apparatus comprising a dot-frequency generator connected to a modulating electrode of a CRT, a power supply source connected to the outer electrodes of a focusing lens so that they are at a potential exceeding that at the cathode of the CRT. In this apparatus referred to, a video amplifier is connected to the inner electrode of the three-electrode focusing lens of the CRT. The aperture in the inner electrode should be equal to the cross-section of the electron beam.

3,688,027

SIGNAL BALANCE AND CONTROL SYSTEM

Robert G. Barrett, Columbia, S.C., assignor to Cablecolor, Inc., Columbia, S.C.

Filed Sept. 15, 1970, Ser. No. 72,459
Int. Cl. H04n 7/10, 7/18
U.S. Cl. 178—6.8 9 Claims



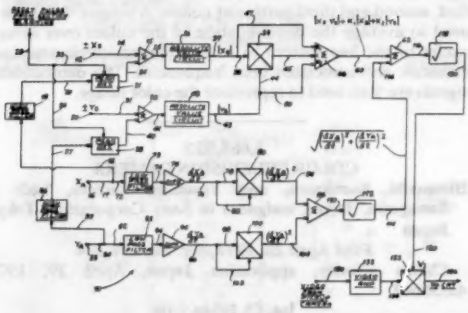
A pair of conductors carrying a plurality of television channel signals of different strength are connected by parallel branch circuits each having a coil and a capacitor extending in series between the conductors with the coil and capacitor of the first branch circuit having a resonance frequency analogous to the video side of a particular television channel and the coil and capacitor of the second branch circuit having a resonance frequency analogous to the frequency of the audio side of said particular television channel so that said particular television channel is dissipated to a voltage level substantially the same as the remaining channels; another feature of the invention resides in the mounting of one of the coil members in a circuit box mechanically connected to the lid of the box to be deformed upon opening of the box to destroy the circuit characteristics and provide a consequent indication of tampering with the box.

3,688,028

BEAM INTENSITY COMPENSATOR

William C. Altemus, Littleton, Colo., assignor to Computer Image Corporation, Denver, Colo.

Filed Sept. 23, 1970, Ser. No. 74,662
Int. Cl. H04n 5/19, 5/58
U.S. Cl. 178—6.8 30 Claims



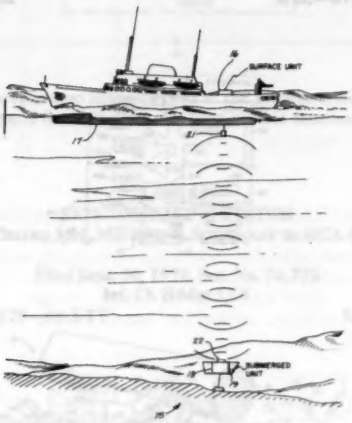
A system for automatically controlling the beam intensity of a display cathode ray tube to generate an image of constant brightness despite variances in the size of the image or scanning velocity of the spot produced by the electron beam, including means for generating a beam intensity control voltage comprised of signals which are functions of the size of the image and/or the scan velocity of the spot.

3,688,029

CABLELESS ACOUSTICALLY LINKED UNDERWATER TELEVISION SYSTEM

Otto E. Bartoe, Jr., 621 Aurora, Boulder, Colo.; Virgil R. Tucker, 910 Crescent Drive, Boulder, Colo., and Ronald D. Wertz, 2005 Vassar Drive, Boulder, Colo.

Filed Sept. 23, 1968, Ser. No. 761,469
Int. Cl. H04n 7/12
U.S. Cl. 178—6.8 20 Claims



A cableless television system for viewing an underwater scene and acoustically transmitting data indicative of the scene to the surface for substantially immediate presentation. The system generates data signals indicative of the camera scene at a predetermined slow scan rate and utilizes data encoding prior to conversion to acoustic energy for transmission. After transmission, the received acoustic energy is reconstituted for video presentation and/or recording. Three separate modes of operation are provided – an FM mode, a delta modulation mode, and a PCM mode. The system also includes acoustical transmission of commands for remote control of the underwater unit and circuitry for verifying unit performance and establishing location.

3,688,030

Patent Not Issued For This Number

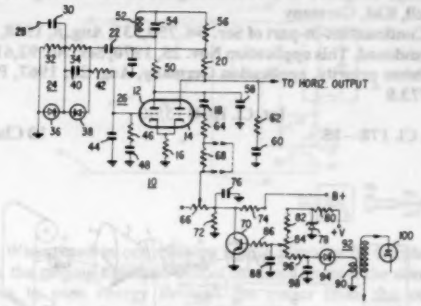
3,688,031

HORIZONTAL OSCILLATOR DISABLING

William Vincent Fitzgerald, Jr., and Paul Carleton Wilmarth, both of Indianapolis, Ind., assignors to RCA Corporation

Filed May 18, 1971, Ser. No. 144,457
Int. Cl. H04n 5/44
U.S. Cl. 178—7.5 R 6 Claims

Pending U.S. Pat. Applications Ser. Nos. 103,713 and 121,250 disclose high voltage protection circuits which change the frequency of the horizontal oscillator of a television receiver in response to an indication of increase in the ultor potential developed for its picture tube which could cause danger of X-radiation. Whereas the circuits of such disclosures operate to change a voltage in the horizontal oscillator to which a capacitor is required to charge in establishing the oscillator frequency, the circuit of the instant invention operates to vary a resistance which, together with a capacitor



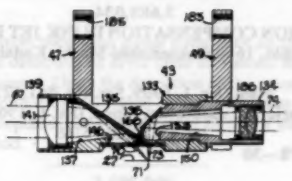
of this type, sets the time constant which determines such frequency.

3,688,032

FACSIMILE TRANSMITTER AND METHOD OF ASSEMBLING THE SAME

Paul H. Dixon, Belvidere, Ill., and Paul R. Schmidt, Stevensville, Mich., assignors to Dixon Automatic Tool, Inc., Rockford, Ill.

Division of Ser. No. 726,408, May 3, 1968, Pat. No. 3,555,266.
This application Sept. 21, 1970, Ser. No. 73,698
Int. Cl. H04n 1/24
U.S. Cl. 178—7.6 9 Claims



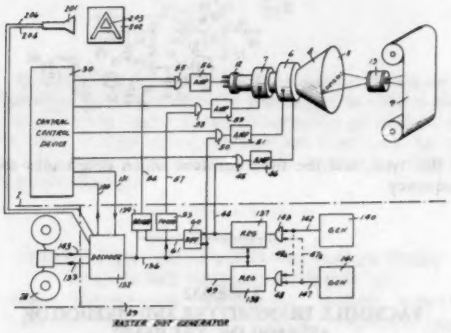
A facsimile transmitter includes a lamp for directing a light beam toward a scanner which reflects the light onto a document to be reproduced, picks up the light reflected from the document and directs such light to a photomultiplier operable to send to a reproducing recorder as electrical signal proportional to the intensity of the light and the shade value of the document. The lamp is accurately pre-located and premounted in a permanent holder which is detachably secured to a lamp housing and which, as an incident to attachment to the housing, automatically locates the lamp in a precisely established position to produce light of maximum intensity, the pre-mounted lamp being located in such position by the holder regardless of dimensional irregularities in the lamp. To focus the light beam on the document accurately and to direct the reflected light along an exact path toward the photomultiplier, the scanner is formed as two initially adjustable telescopic units carrying relatively simple plane mirrors adapted to be adjusted into precisely established positions by sliding and rotating the units and thereafter held permanently in such positions by bonding the units rigidly together.

3,688,033

METHOD OF COMPOSING HALF-TONE PICTURES BY MEANS OF ELECTRONIC PHOTOTYPE SETTERS

Rudolf Hell; Klaus Wellendorf, both of Kiel; Roman Koll, Kiel-Wellingdorf, and Eckhard Lindemann, Raisdorf, all of Germany, assignors to Kommanditgesellschaft Dr.-Ing Rudolf Hell, Kiel, Germany

Continuation-in-part of Ser. No. 750,531, Aug. 6, 1968, abandoned. This application Nov. 25, 1970, Ser. No. 92,615
Claims priority, application Germany, Aug. 26, 1967, P 15 97 773.8
Int. Cl. H04l 15/00
U.S. Cl. 178—15 10 Claims



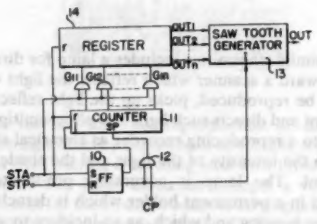
Method and apparatus for composing continuous tone pictures by means of electronic phototype setters wherein characters to be reproduced are manually or photographically produced and scanned electro-optically and then stored in binary coded form into a memory. The characters are read from the memory based on a program and continuous tone pictures are composed for relief printing and offset printing by using a finite number of raster fields of different forms and which may be combined to produce a desired image for printing.

3,688,034

DISTORTION COMPENSATION IN INK JET RECORDING

Toshio Kashio, 1660 Gakuennishi-Machi, Kodaira-shi, Tokyo, Japan

Filed Dec. 1, 1969, Ser. No. 881,127
Claims priority, application Japan, Dec. 6, 1968, 43/89026
Int. Cl. G01d 15/18
U.S. Cl. 178—30 10 Claims



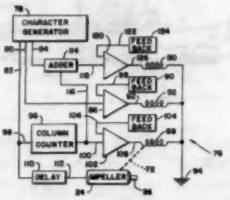
An ink jet type recording arrangement is available to write or print successive characters on a recording medium. Such recording arrangement has a writing head which is horizontally moved to successively write the characters. In case the writing head is manually operated to write successive characters, the moving velocity of the writing head varies time to time. The variation of the moving velocity of the head causes the character to be distorted. In order to compensate for the distortion of printing character, therefore, it is required to detect the moving velocity of the manual-operating head and to generate control voltage in response to the detected velocity. The control voltage generated is applied to the horizontal deflecting electrodes incorporated into the head to control the writing of the characters due to the ink jet.

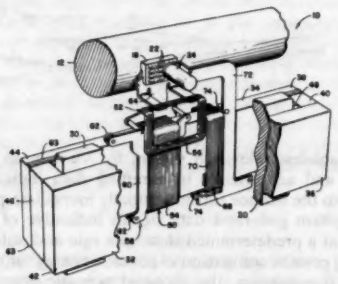
3,688,035

TELEPRINTER TYPE SELECTION AND ASSEMBLY THEREFOR

Gerhard Cless, Skokie, Ill., assignor to Teletype Corporation, Skokie, Ill.

Filed May 28, 1970, Ser. No. 41,485
Int. Cl. H04l 17/30
U.S. Cl. 178—33 R 25 Claims





Driveable type dies of a teleprinter are supported in intersecting rows and columns from a type carrier which is arranged for adjustment in intersecting paths at successive stations to which the carrier is moved for presenting any selected die in a position for character reproduction. Adjustment and movement of the carrier and translocation of an impeller to successive printing stations for driving successively selected dies between print and non-print modes results from magnetomotive phenomena generated by a linear electric motor.

In the magnetic flux field of the motor, a pair of mechanically coupled electrical coils are adapted magnetomotively to produce (1) vertical adjustment of an output member to which the carrier is secured and in a path corresponding to type row adjustment, (2) horizontal adjustment of a trolley from which the output member is adjustably carried and in a path corresponding to type column adjustment and (3) horizontal stepping movement of said trolley to successive printing stations. A magnetomotive force, which a third electrical coil of the motor is adapted to induce, steps the impeller to successive printing stations.

3,688,036

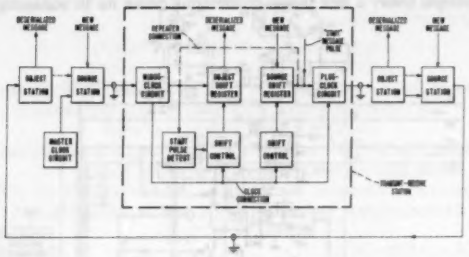
BINARY DATA TRANSMISSION SYSTEM AND CLOCKING MEANS THEREFOR

George F. Bland, 4 Edgepark Road, White Plains, N.Y.

Filed June 30, 1970, Ser. No. 51,247
Int. Cl. H04l 15/00; H04q 5/06, 9/06
U.S. Cl. 178—68 3 Claims

A serial binary data transmission system which is self-clocking and recovers clock signals by rectification of a trans-

mitted bipolar signal. By use of the present system, a plurality of stations may be served by a single master clock. Being base



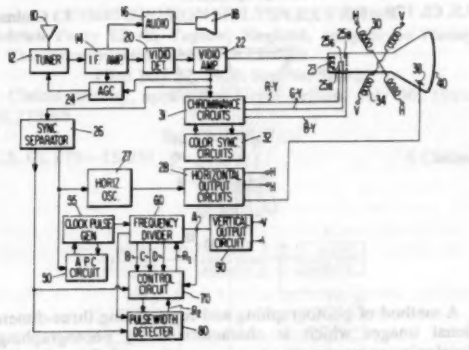
band, there are no tuned circuits in the present system nor is there a need for individual clocks at remote terminals of stations.

3,688,037

SYNCHRONIZING SYSTEM

Alfred Charles Ipri, Marlton, N.J., assignor to RCA Corporation

Filed Sept. 30, 1970, Ser. No. 76,778
Int. Cl. H04m *5/06*
U.S. Cl. 178—69.5 TV **13 Claims**



A vertical phase synchronization system for a television receiver develops vertical deflection frequency signals by employing a resetable frequency divider circuit to count down clock pulses having a frequency twice the horizontal deflection frequency. The resultant internally generated vertical signals are compared with received external vertical synchronization signals. If a phase error exists, a pulse width detector to which external sync pulses subject to noise are applied, is activated. When activated, the pulse width detector develops a reset pulse for the frequency divider to lock the phase of the internally generated vertical signals with external vertical sync in response only to a pulse of the requisite vertical sync pulse duration, thereby providing noise immunity for the system.

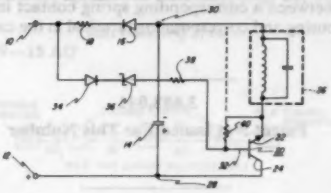
3,688,038

STORED ENERGY SIGNALLING CIRCUIT

Matyas Hugyecz, and Carroll S. Richmond, both of Rochester, N.Y., assignors to Stromberg-Carlson Corporation, Rochester, N.Y.

Filed April 12, 1971, Ser. No. 133,296
Int. Cl. H04m *1/26*
U.S. Cl. 179—84 R **16 Claims**

A signalling circuit for telephone sets utilizes ringing signals applied thereto to enable a control device, such as a transistor, to pass energy through a signalling device, such as a ringer, thereby actuating it during the ringing cycle. When used in conjunction with one telephone line, the energy is supplied from an energy storage means in the circuit, such as a capacitor, which receives and stores the charge from the telephone



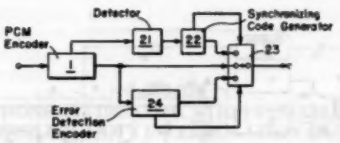
line. When used in conjunction with a plurality of telephone lines, the ringing signal on one of the lines enables the control device to pass energy through the ringer from the other telephone lines. A capacitor connected to receive and store energy from all the connected telephones can be used to supplement the energy supplied from the telephone lines.

3,688,039

DIGITAL SIGNAL RECEPTION SYSTEM

Tatsuo Ishiguro, Tokyo, Japan, assignor to Nippon Electric Company Limited, Tokyo, Japan

Filed Aug. 3, 1970, Ser. No. 60,671
Claims priority, application Japan, Aug. 5, 1969, 44/62204
Int. Cl. H04l *15/24*
U.S. Cl. 178—88 **6 Claims**



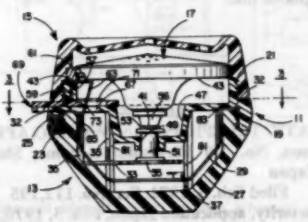
A digital system reception signal comprises an error detection circuit for detecting an error code contained in the transmitted coded signal. Upon the detection of the error code, the received composite digital signal of the repetition period or scanning line replaces the stored coded signal of the previous repetition period.

3,688,040

TRANSMITTER CUT-OFF

Robert S. Goodrich, 27901 S. Golden Meadow Drive, Palos Verdes Peninsula, Calif.

Continuation-in-part of Ser. No. 64,308, Aug. 17, 1970. This application Dec. 17, 1970, Ser. No. 98,984
Int. Cl. H04m *1/19*
U.S. Cl. 179—167 **7 Claims**



A telephone cut off device for a telephone transmitter which is an insert disposed between the mouthpiece of the

transmitter and the main transmitter housing. The device has contacts on one side thereof for engaging the contacts in the transmitter housing, the contacts extending through the device to engage the corresponding terminals on a transmitter capsule unit in the mouthpiece. A depressible means for moving one of the contacts in the device is provided to break the contact between a corresponding spring contact in the transmitter housing and corresponding terminal in the capsule unit.

3,688,041

Patent Not Issued For This Number

3,688,042

Patent Not Issued For This Number

3,688,043

TIMER CIRCUIT OF AN AUTOMATIC TELEPHONE ANSWERING APPARATUS

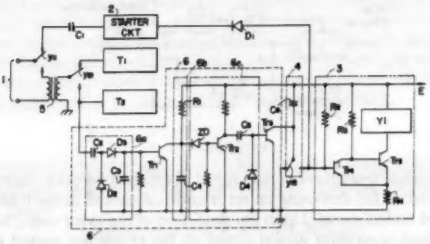
Akira Konno, Shinagawa-ku, Tokyo, Japan, assignor to Pioneer Electronic

Filed Dec. 29, 1970, Ser. No. 102,465

Claims priority, application Japan, Dec. 29, 1969, 45/2087

Int. Cl. H04m *1/64*

U.S. Cl. 179—6 R **5 Claims**



A timer circuit for controlling the operation of an automatic telephone answering apparatus wherein an incoming message from a calling party is discriminated from continuous signals, such as dial tones, or periodic intermittent signals, such as busy tones. The apparatus is continuously operated to record an incoming message as long as the message is received, and is returned to a stand-by state after the incoming message is completed even if above-mentioned other signals are received from a telephone line.

3,688,044

AUTOMATIC TELEPHONE ANSWERING APPARATUS

Akira Konno, No. 3-9 Hiratsuka 1-chome, Shinagawa-ku, Tokyo, Japan

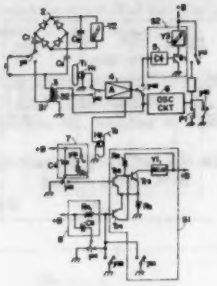
Filed Feb. 3, 1971, Ser. No. 112,195

Claims priority, application Japan, Feb. 3, 1970, 45/9460

Int. Cl. H04m *1/64*

U.S. Cl. 179—6 R **5 Claims**

An automatic telephone answering apparatus which keeps recording an incoming message as long as the pause time is not over a certain period, for example 10 seconds. The apparatus,



however, stops recording after a maximum recording time, for example 60 seconds.

3,688,045

METHOD FOR PHOTOGRAPHING AND REPRODUCING THREE-DIMENSIONAL IMAGES

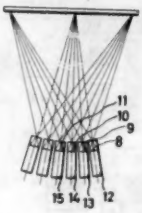
Takanori Ohkoshi, No. 7-7, 3-chome, Sengoku, Bunkyo-ku, Tokyo, Japan

Filed March 4, 1970, Ser. No. 16,430

Claims priority, application Japan, March 10, 1969, 44/17845

Int. Cl. H04n *9/54*

U.S. Cl. 178—6.5 **13 Claims**



A method of photographing and reproducing three-dimensional images which is characterized by photographing, developing or transmitting two or more images of the object as viewed from different directions with such magnifying powers as being different in vertical direction and lateral direction, using a lens system having such focal distances as being different in vertical direction and lateral direction.

3,688,046

Patent Not Issued For This Number

3,688,047

SWITCHING SYSTEM CHARGING ARRANGEMENT

Joel Morton Morris, Baltimore, Md., assignor to Bell Telephone Laboratories, Incorporated, Murray Hill, Berkeley Heights, N.J.

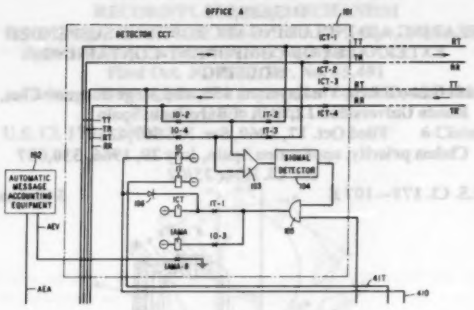
Filed Aug. 31, 1970, Ser. No. 68,076

Int. Cl. H04m *15/18*

U.S. Cl. 179—7.1 R **12 Claims**

A switching system operable to establish a communication path comprising a video connection and an audio connection between stations is arranged with apparatus operable to detect the enabling of either or both said connections and further operable to control billing equipment to record the completion and duration of each such connection. Upon answer of a calling connection by a conventional telephone, audio answer

supervision is returned and a corresponding billing entry is made. If the calling connection is initially or subsequently answered from a station equipped for video the concurrent presence of an audio supervision signal and a video supervi-



sion signal enables logic circuitry in the associated trunk circuits which causes the video channel to be unblocked at the called office and a combined audio-video billing entry to be made at the calling office.

3,688,048

CODE DIVISION MULTIPLEX SYSTEM

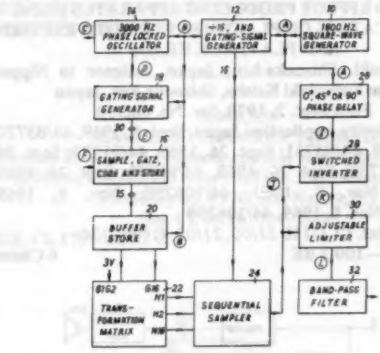
Adrian Percy Clark, Taplow, England, assignor to Plessey Telecommunications Resea. ch Limited

Filed July 27, 1970, Ser. No. 58,620

Claims priority, application Great Britain, July 30, 1969, 38,273/69

Int. Cl. H04j *3/04*

U.S. Cl. 179—15 BW **6 Claims**



In digital transmission systems for use over H.F. radio links, the effects of multi-path propagation can be reduced by limiting the minimum duration of a signal element. The invention is concerned with a system for use when a transmission rate much greater than that which can be accommodated on a single channel if this minimum element duration is maintained. A code-division multiplex system is used. A first plurality of multi-level signals each represents a plurality of elements of the incoming signal. An orthogonal transformation matrix produces a second plurality of multi-level signals, the level of each of which is dependent on all said first plurality of multi-level signals. A time-division-multiplex signal is then produced from said second plurality of multi-level signals and used to modulate a carrier signal.

3,688,049

PCM TIME DIVISION MULTIPLEX PROCESS

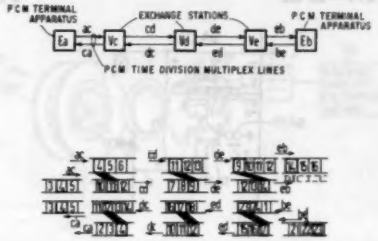
Max Schlichte, 8000 Munich, 71, Germany, assignor to Siemens Aktiengesellschaft, Berlin and Munich, Germany

Filed Aug. 26, 1970, Ser. No. 66,984

Claims priority, application Germany, Aug. 28, 1969, P 19 43 768.4

Int. Cl. H04j *3/16*

U.S. Cl. 179—15 AQ **4 Claims**



A process for jointly completing a connection for both transmission directions in a pulse code modulated telecommunication network having a plurality of exchange stations connected over four wire time division multiplex lines. The system operates according to the invention to complete a connection in segments simultaneously for both transmission directions without the need for frame equalization.

3,688,050

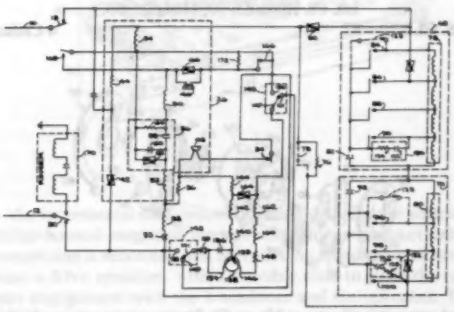
TELEPHONE SET IDENTIFICATION SYSTEM USING REVERSE POLARITY INTERROGATION SIGNAL

Norman E. Goetchius, and Amin Y. Zaky, both of Rochester, N.Y., assignors to Stromberg-Carlson Corporation, Rochester, N.Y.

Filed Oct. 26, 1970, Ser. No. 83,700

Int. Cl. H04m *1/50, 3/56*

U.S. Cl. 179—17 A **12 Claims**



A telephone set identification system wherein telephones are equipped with circuits that are responsive to a reversal of the battery potential from the central office (when the telephone is off hook) to generate and transmit a preselected identification signal to the central office.

3,688,051

CIRCUIT ARRANGEMENT FOR A PULSE-CONTROLLED CONNECTION OF A TELECOMMUNICATION SIGNAL SOURCE TO A TELECOMMUNICATION SIGNAL LOAD

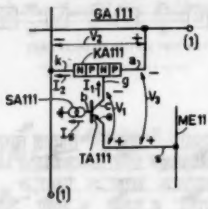
Einar Andreas Aagaard, Emmasingel, Eindhoven, Netherlands, assignor to U.S. Philips Corporation, New York, N.Y.

Filed May 21, 1970, Ser. No. 39,283

Claims priority, application Netherlands, May 30, 1969, 6908332

Int. Cl. H04q 3/50

U.S. Cl. 179—18 GF 5 Claims



A circuit arrangement for a pulse-controlled connection of a telecommunication signal source to a telecommunication signal load, comprising a semiconductor device having a main current path and a control-current path partially coinciding with the main current path, the main current path forming a low impedance for currents exceeding a given holding current and a high impedance for currents lower than said holding current, the control-current path reducing said holding current for control-currents of a given polarity, in which arrangement said main current path is connected between said source and said load and said control-current path is connected to a control-terminal, a control-pulse source being connected to the control-terminal and a direct-current source being connected to said main current path, wherein between the control-current path and the control-terminal is connected an element whose differential resistance for currents of a polarity opposite said given polarity having a value lower than a given first value has a low value and for currents of said opposite polarity having a value exceeding said given first value has a high value.

3,688,052

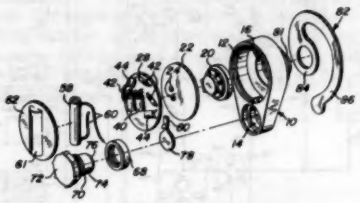
AUDIO FREQUENCY RECEIVER

Aaron C. Self, 5741 Seven Gables Ave., Madison Township, Montgomery County, Ohio, and James J. Larkins, 331 W. Hudson Ave., Dayton, Ohio

Filed May 4, 1970, Ser. No. 34,133

Int. Cl. H04b 65/00; H04r 25/00

U.S. Cl. 179—82 4 Claims



A magnetically operable audio frequency receiver which is adapted to be carried by a person, adjacent an ear of the person. The receiver is disposed within a limited area which is encompassed by a transmission loop. The receiver includes a pickup coil.

Transmission of energy occurs by audio frequency inductive forces from the transmission loop to the pickup coil of the receiver. The receiver or a portion thereof is rotatably supported so that the axis of the pickup coil can be adjusted with respect to the transmission loop for control of the volume output of the receiver. The receiver has an energy cell or battery support member which not only supports the battery but also serves as a switch.

3,688,053

HEARING AID INCLUDING MICROPHONE SUSPENDED EXTERNALLY OF COMPONENT-CONTAINING HOUSING

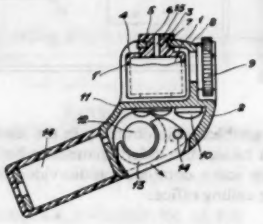
Juan Gasso Bosch, Via Layetana 158, and Jorge Borguno Clua, Ronda Universidad 12, both of Barcelona, Spain

Filed Oct. 17, 1969, Ser. No. 867,421

Claims priority, application Spain, July 29, 1966, 330,087

Int. Cl. H04r 25/02

U.S. Cl. 179—107 E 5 Claims



A hearing aid includes a housing containing the electrical and electronic components and having a bracket extending externally thereof and formed with an aperture. A microphone is enclosed in a protective elastic sheathing having a projecting tubular neck communicating with the sound entry portion of the microphone. The neck extends through the aperture and has an interlocking fit therein, the neck suspending the microphone from the support bracket and constituting the sole support for the microphone.

3,688,054

VIBRATO EFFECT PRODUCING APPARATUS USING RECIPROCATING DISPLACEMENT OF BOTH RECORD AND PLAYBACK HEADS

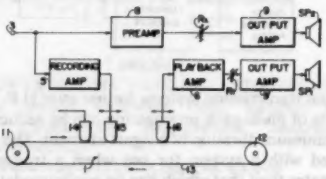
Akihisa Suzuki, Shizuoka-ken, Japan, assignor to Nippon Gakki Seizo Kabushiki Kaisha, Shizuoka-ken, Japan

Filed Sept. 2, 1970, Ser. No. 68,950

Claims priority, application Japan, Sept. 3, 1969, 44/83720; Sept. 3, 1969, 44/83721; Sept. 26, 1969, 44/91729; Sept. 26, 1969, 44/91730; Sept. 26, 1969, 44/91731; Sept. 26, 1969, 44/91732; Nov. 8, 1969, 44/106288; Nov. 8, 1969, 44/106289; Nov. 8, 1969, 44/106290

Int. Cl. G11b 31/00, 21/02; G10h 1/04

U.S. Cl. 179—100.2 RE 6 Claims



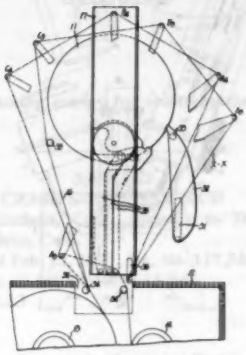
A vibrato effect producing apparatus in which there are provided a running means for producing a relative motion between a magnetic recording medium, such as a magnetic tape, and tone signal recording head and reproducing head, and means for providing periodical deviation of the instantaneous speed of the recording medium relative to the reproducing head from the instantaneous speed of the record-

ing medium realtive to the recording head, while keeping the average value of the both speeds equal, so that a frequency modulated signal may be derived at the reproducing head.

3,688,055
GUIDE PLATE FOR USE WITH TAPE RECORD/PLAYBACK MECHANISM

Katsu Inaga, and Yotaro Miura, both of Tokyo, Japan, assignors to Sony Corporation, Tokyo, Japan

Filed Oct. 30, 1970, Ser. No. 85,491
Claims priority, application Japan, Jan. 24, 1970, 45/6480
Int. Cl. G11b *15/66, 23/04*
U.S. Cl. 179—100.2 Z 6 Claims

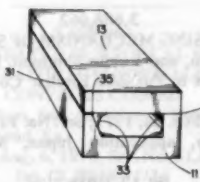


A guide plate for use with a tape record/playback mechanism which is useful for insuring that a tape loop is properly placed around a drum having magnetic heads therein and an inclined tape guide member. Movable fingers form the tape into a loop and transport it and then drop the tape around the drum and inclined guide. If the tape is prematurely dropped it will not be in contact with the inclined guide. The guide plate will intercept a premature drop and lead the tape around the inclined guide.

3,688,056
MAGNETIC TRANSDUCER HEADS

Thomas D. Wiseley, Concord, and Roy Rallis, Burlington, both of Mass., assignors to Honeywell Inc., Minneapolis, Minn.

Filed May 21, 1970, Ser. No. 39,251
Int. Cl. G11b *5/14, 5/42*
U.S. Cl. 179—100.2 C 15 Claims

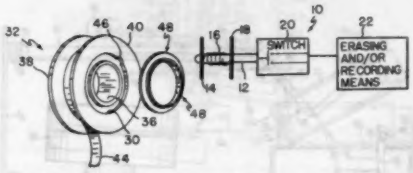


A high frequency ferrite magnetic transducer head sliced from a profiled glass bonded assembly contains a non-magnetic conductive spacer material uniformly disposed throughout the recording gap forming area.

3,688,057
ERASURE PREVENTION CONTROL FOR MAGNETIC TAPE REELS HAVING A SAFETY RING TO PREVENT INSERTION OF A FILE PROTECT RING

Joseph L. Lee, 12019 Edgewater Dr., Lake Park, Fla.

Filed July 21, 1970, Ser. No. 56,780
Int. Cl. G11b *15/04*
U.S. Cl. 179—100.2 D 10 Claims

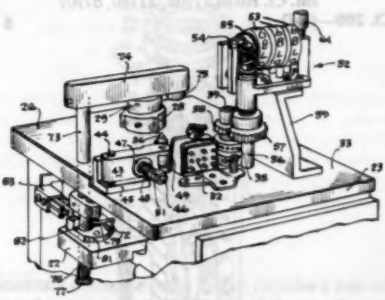


A safety ring is disclosed for insertion in a hub groove of a conventional magnetic tape reel to prevent insertion, in the groove, of a conventional file protect ring in order to prevent inadvertent erasure of the information recorded on the tape. A tool is required to remove the safety ring from the groove thereby preventing inadvertent or unthinking removal of the safety ring.

3,688,058
INCREMENTAL DATA-PROCESSING SPROCKETED TAPE DECK

John S. Findlay, Wilmette, Ill., assignor to Microdyne, Inc., Rolling Meadows, Ill.

Filed Aug. 28, 1970, Ser. No. 67,876
Int. Cl. G11b *15/20, 15/34, 23/08*
U.S. Cl. 179—100.2 Z 12 Claims



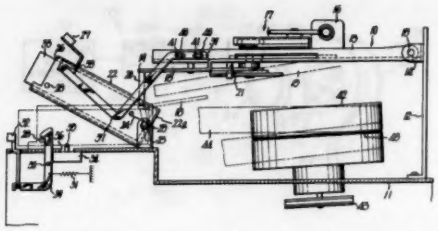
An incremental data-processing tape deck for use with cartridge-housed magnetic tape punched for a sprocket drive, comprising a recording and reproducing transducer mounted near a drive sprocket, with a movable slide to guide the tape into engagement with the transducer and the sprocket. The slide is actuated by a hold-down device that latches the tape cartridge in operating position. Incremental or slow continuous tape advance is effected by the sprocket, with tape take-up afforded by a first spindle actuated through a slip clutch. The same spindle can be driven directly for fast forward motion of the tape; a second concentric spindle provides for fast reverse tape movement. A tape tensioner maintains the tape in engagement with the transducer.

3,688,059

TAPE RECORDER WITH PIVOTALLY MOUNTED CASSETTE LOADING PLATE HAVING ROTABLE TAPE GUIDING FINGERS

Yutaro Miura, and Shojiro Asami, assignors to Sony Corporation, Tokyo, Japan

Filed Oct. 30, 1970, Ser. No. 85,599
Claims priority, application Japan, Jan. 24, 1970, 45/6487
Int. Cl. G11b *15/66, 23/04*
U.S. Cl. 179—100.2 F 6 Claims



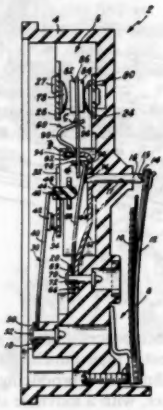
A loading loading plate having longitudinally rotatably tape tape buiding fingers thereon in the loading the load plate is pivotally mounted on the chassis of a tape recorder. The loading plate is linked to a cassette holder by a substantially "shaped lever shaped lever which permits the loading plate to pivot in response to pivotal cassette of the cassette holder. The cassette holder is pivoted to energize the tape recorder and the loading plate is pivoted therewith so as to place the tape guiding fingers behind the tape in the cassette where the tape can be withdrawn from the cassette.

3,688,060

ELECTRICAL SWITCH MEANS FOR EFFECTING SEQUENTIAL OPERATION

Jerry A. Risk, Versailles, Ky., assignor to Texas Instruments Incorporated, Dallas, Tex.

Filed Aug. 24, 1970, Ser. No. 66,312
Int. Cl. H01h *21/02, 21/40, 61/01*
U.S. Cl. 200—67 D 8 Claims



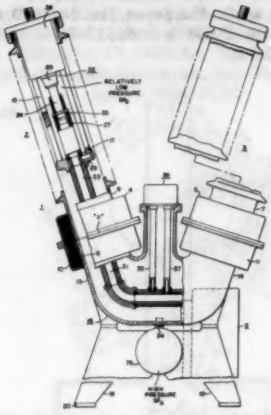
A creep action switch structure auxiliary to and operating in planned sequence with a snap acting switch is shown. In the embodiment shown, the main switch is part of a time delay relay in which the auxiliary switch provides a shorter heat or cool time relative to the main switch and also provides a means of reducing the total time delay on heating or cooling for multiple relay use.

3,688,061

IMPROVED COMPRESSED-GAS CIRCUIT INTERRUPTER WITH SPLIT CURRENT-TRANSFORMER HOUSING FOR READY DISASSEMBLY

Richard E. Kane, 1255 Holy Cross Dr., Monroeville, Pa., and Robert L. Hess, 329 Delaware Ave., North Versailles, Pa.

Filed Jan. 21, 1970, Ser. No. 4,483
Int. Cl. H01h *33/54*
U.S. Cl. 200—148 R 6 Claims



A gas-blast circuit interrupter has a substantially V-shape with two insulating interrupter columns extending angularly upwardly away from a grounded generally V-shaped lower metallic supporting housing. The arrangement is such that a grounded split current-transformer housing is employed, one split current-transformer housing section being fixedly secured to the lower end of each interrupter column, and the other current-transformer housing section being fixedly secured to the upper tubular supporting portion of the lower generally V-shaped grounded supporting housing. By the clamping together of the two current-transformer housing sections, a ready attachment and detachment is effected for the quick assembly and disassembly of the circuit interrupter.

A blast-valve, stationary contact assembly and high-pressure reservoir is disposed, as an assembly, at the upper end of each of the two interrupter columns. A cooperable movable tubular contact, having a piston secured thereto, moves generally downwardly during the opening operation, with the high and low-pressure feed tubes to the operating cylinder being generally concentric, with a tubular line-conductor, which passes generally axially down the center of the interrupter column, and makes a U-bend within the lower generally V-shaped supporting metallic housing.

3,688,062

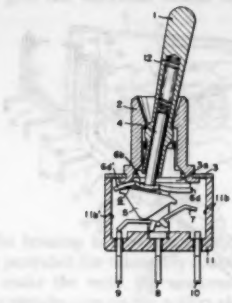
REVERSING MECHANISM OF SWITCH

Makoto Yamamoto, and Yukito Shintomi, both of Kawasaki, Japan, assignors to Fujisoku Electric Co., Ltd., Kawaeaki, Japan

Filed Feb. 24, 1971, Ser. No. 117,917
Claims priority, application Japan, March 24, 1970, 45/27966
Int. Cl. H01h *3/04*
U.S. Cl. 200—153 K 8 Claims

A reversing mechanism for switches comprises a reversing member made of an elastic pliable sheet material. The reversing member is arranged within a switch box and associated with a push rod of the switch, by which a movable contact can be actuated, so that the ON-OFF-ON characteristic of the switch may be automatically controlled. The

reversing member is shifted sidewise with the push rod to deflect and curve the member into downwardly convexed



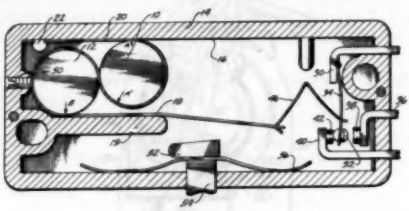
form, thereby storing energy for returning the push rod to neutral position.

3,688,063

CRASH SENSING SWITCH

Lon E. Bell, Altadena, Calif., assignor to Technar Incorporated, Pasadena, Calif.

Filed Feb. 22, 1971, Ser. No. 117,560
Int. Cl. H01h 35/14
U.S. Cl. 200—61.53 20 Claims



There is described a crash switch which can sense acceleration forces that operate for some period of time such that the product of acceleration and time exceeds some predetermined level before the switch is actuated. The switch utilizes rollers supported by a band wrapped around the rollers, in which movement of the rollers along the band actuates switch contacts to signal movement of the rollers over a predetermined distance. In one modification, change in the center of gravity of the rollers is used to shift the direction of maximum sensitivity to the accelerating force. A single calibration adjustment, by shifting the initial position of the rollers, controls both the level of acceleration force required to move the rollers and the acceleration-time product level required to trigger the switch to the nominal design levels.

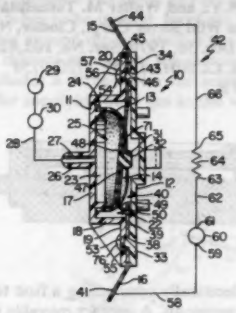
3,688,064

VACCUUM OPERATED ELECTRICAL SWITCH WITH CUP SHAPED DIAPHRAGM NORMALLY HOLDING CONTACTS CLOSED

Ned C. Myers, Elkhart, Ind., assignor to Robertshaw Controls Company, Richmond, Va.

Filed Aug. 6, 1970, Ser. No. 61,687
Int. Cl. H01h 35/34
U.S. Cl. 200—83 N 11 Claims

A flexible diaphragm being carried by a support means and defining an actuating chamber therewith. A switch blade is carried by the support means and is movable relative thereto, the switch blade being interconnected to the diaphragm to move in unison therewith. A fixed contact blade is carried by the support means. The switch blade has a free end that is arcuate in cross-sectional configuration so as to be adapted to engage against the contact blade at the side edge of the switch



blade when the diaphragm is in one position thereof relative to the support means.

3,688,065

MOMENTARY CONTACT SWITCH

Walter A. Wolf, and Prentice R. Corn, both of Logansport, Ind., assignors to Switches, Inc.

Filed Dec. 1, 1970, Ser. No. 94,240
Int. Cl. H01h 3/12
U.S. Cl. 200—159 B 15 Claims

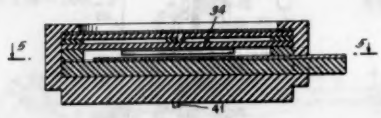
A momentary contact electric switch includes a pair of normally spaced annular contacts formed of electrically conductive material and supported in an upwardly open annular recess in a reinforcing member formed of a rigid insulating material. A flexible and resilient casing surrounds the reinforcing member, and a switch actuating portion is provided on the undersurface of the crown portion of the casing. The actuating portion includes a downwardly extending rib that is positioned in alignment with an annular protuberance on the upper contact, which in turn is positioned in alignment with a plurality of radially extending protuberances on the lower contact. A plurality of webs extend radially on opposite sides of the downwardly extending rib, so that the actuating portion of the casing has a uniform feel throughout its circumferential extent. The contacts are retained in normally spaced insulated relation by a pair of annular insulating members of limited radial extent that allow the upper contact to flex downwardly relative to the lower contact.

3,688,066

SWITCH FORMS FOR CONNECTING ONE TERMINAL TO A PLURALITY OF OTHER TERMINALS

Alexander M. Adelson, Elmsford; Jerome Swartz, Stony Brook, both of N.Y., and Walter M. Tomasulao, Jr., Wayne, N.J., assignors to Wild Rover Corp., Closter, N.J.

Filed Dec. 30, 1970, Ser. No. 102,822
Int. Cl. H01h *13/52, 1/20, 1/58*
U.S. Cl. 200—159 B **15 Claims**



A switch for electrically connecting a first terminal with a plurality of other terminals. A contact movable into and out of electrical engagement with a plurality of base contacts is employed. The movable contact may comprise physically parallel wires affixed to a flexible plate, as well as wires which radiate radially outwardly from a point. The physically parallel wires may be inclined to the base contacts or the base contacts may be of different thicknesses to achieve sequential contacting of the base contacts by the movable contact. The base contacts may be any convenient shape, or in the form of concentric spirals or interspersed parallel segments or adjacent triangular-shaped segments.

3,688,067

COMPOSITE SILVER CADMIUM OXIDE ALLOY CONTACT WITH SILVER CADIUM SURFACE

Akira Shibata, Tokyo, Japan, assignor to Chugai Electric Industrial Co., Ltd., Tokyo, Japan

Filed Feb. 8, 1971, Ser. No. 113,541
Int. Cl. H01h *1/02*
U.S. Cl. 200—166 C **2 Claims**

A composite electric contact comprising a silver-cadmium oxide alloy as the contact material or element and having a silver-cadmium layer integrally formed on the face opposite to the contact face. The concentration of cadmium oxide particles increases from a minimum at the contact face to a maximum toward the face with the silver-cadmium layer.

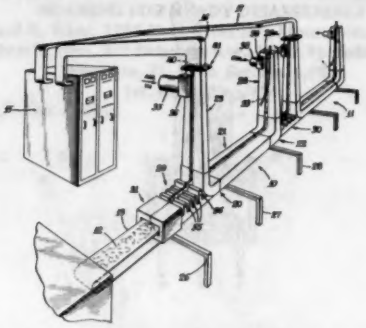
3,688,068

CONTINUOUS MICROWAVE HEATING OR COOKING SYSTEM AND METHOD

Ray M. Johnson, 118 Verde Mesa, Danville, Calif.

Filed Dec. 21, 1970, Ser. No. 100,395
Int. Cl. H05b *9/06*
U.S. Cl. 219—10.55 **11 Claim**

A rectangular type wave guide applicator having a pair of opposing broadwalls separated by a distance b, is excited in principally the TE_{10} mode; and material being treated is conveyed through the applicator along the direction of power flow. The distance *b*, is maintained throughout the applicator to be less than half a wavelength of the excitation frequency so that only TE_{mo} modes will propagate. Rejection filters are provided at the input and exit apertures through which the material is passed to prevent the escape of microwave energy without absorbing it. Air is circulated through the heating chamber for removing moisture and gases. A termination is provided downstream of the heating chamber in the form of a water load to absorb all microwave energy not absorbed in the material being treated to insure that the source sees a load



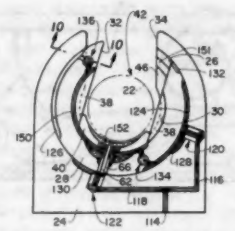
which is substantially independent of variations in the amount of material being treated.

3,688,069

WELDING HEAD APPARATUS

Gasparas Kazlauskas, 10707 Camarillo St., North Hollywood, Calif.

Filed Nov. 23, 1970, Ser. No. 92,023
Int. Cl. B23k *9/12*
U.S. Cl. 219—60 A **3 Claims**



A welding head, to effect welding of cylindrical tubes wherein the head includes a fixed housing and a rotatable housing, a welding electrode contained wherein the rotatable housing, both the fixed housing and rotatable housing having alignable openings through the wall structure of each to permit entry and removal of the tube, passage structure located within both the fixed housing and rotatable housing to continuously supply inert gas to the molten puddle at the welding location, the passage structure effecting continuous application of the gas to the molten puddle during rotational movement of the rotatable housing with respect to the fixed housing.

3,688,070

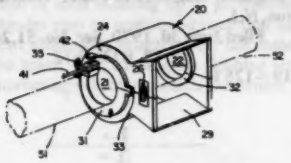
WORK ENCLOSURE WELDING OF ALUMINUM TUBING OR THE LIKE

Harry J. Smith, 1423 Boot Rd., Chester, Pa.

Filed Feb. 9, 1971, Ser. No. 114,008
Int. Cl. B23k *9/02*
U.S. Cl. 219—60 A **3 Claims**

A work enclosure for facilitating inert gas welding of aluminum tubing has two split hinged collars clamped about the tubing, one on either side of the butt joint to be welded. The circumferential surface of each collar has an outer radially extending flange and an inner shoulder forming a bearing surface adapted to receive one of the side walls of a split housing. The housing has a tubular body portion, the side walls of

which have circular openings therein for receiving the collars. The hinged housing when closed has a hooded open window therein to give the workman access to the butt joint to be



welded. The housing is movable rotationally on the collars. Means are provided for releasably locking the housing to the collar. To make the weld, the workman moves the housing rotationally step-by-step on the collars about the tubing.

3,688,071

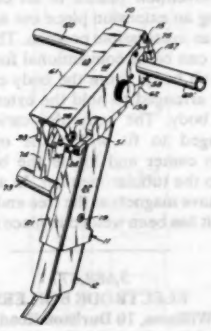
WELDING HEAD WITH DETACHABLE POWER HANDLE

Robert W. Kennelly, Aurora, Ohio, assignor to The Weatherhead Company, Cleveland, Ohio

Filed March 24, 1971, Ser. No. 127,524

Int. Cl. B23k 9/02

U.S. Cl. 219—60 A **14 Claims**



An in-place inert gas tube welder is disclosed which includes a head portion and a handle portion. The head portion includes a clamping means having an over-center toggle for clamping the tubes to be welded. A sectored ring carries a nonconsumable tungsten electrode along a path adjacent the junction of the tubes to be welded. Inert gas is supplied to the welding chamber around the full 360° of the joint. A one-way clutch permits manual rotation of the sectored ring. The handle portion includes a drive motor for rotating the sectored ring, a means for supplying electrical power to the electrode. An attachment means releasably secures the handle portion to the head portion. A supply cable is releasably connected to the handle portion for releasably connecting an inert gas source to the means for supplying inert gas to the welding chamber and for releasably connecting an electrical power source to the means for supplying electrical power to the electrode.

3,688,072

WELDING HEAD INERT GAS SUPPLY

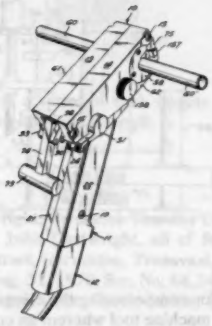
Ludwig Witt, Lakewood, Ohio, assignor to The Weatherhead Company, Cleveland, Ohio

Filed March 24, 1971, Ser. No. 127,599

Int. Cl. B23k 9/02

U.S. Cl. 219—60 A **15 Claims**

An in-place inert gas tube welder is disclosed which includes a head portion and a handle portion. The head portion includes a clamping means having an over center toggle for clamping the tubes to be welded. A sectored ring carries a nonconsumable tungsten electrode along a path adjacent the junction of the tubes to be welded. A sectored ring carries a nonconsumable tungsten electrode along a path adjacent the junction of the tubes to be welded. Inert gas is supplied to the welding chamber around the full 360° of the joint. A one-way clutch permits manual rotation of the sectored ring. The handle portion includes a drive motor for rotating the sectored ring, a means for supplying inert gas to the welding chamber,



and a means for supplying electrical power to the electrode. An attachment means releasably secures the handle portion to the head portion. A supply cable is releasably connected to the handle portion for releasably connecting an inert gas source to the means for supplying inert gas to the welding chamber and for releasably connecting an electrical power source to the means for supplying electrical power to the electrode.

3,688,073

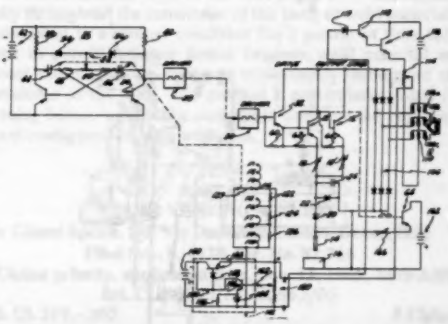
GAP SHORT CIRCUIT LIMITING SYSTEM FOR ELECTRICAL DISCHARGE MACHINING

Dalton R. Verner, Orchard Lake, Mich., assignor to Klox Inc., Davidson, N.C.

Filed Feb. 1, 1971, Ser. No. 111,289

Int. Cl. B23p 1/08

U.S. Cl. 219—69 C **7 Claims**



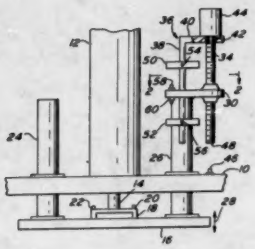
A circuit is included to provide preselected gap cutting current limiting. A main machining DC source is derived from an AC source through a rectifier. A saturable reactor is connected between the AC source and rectifier to limit the maximum current that is available from the DC source. The control of the saturable reactor is maintained and regulated in accordance with the frequency at which the electrical discharge machining operation is being carried out.

3,688,074

ELECTRODE WEAR COMPENSATING APPARATUS FOR AN ELECTRICAL DISCHARGE MACHINE

Kurt Stirner, Churchville, and Allen Berger, Wayne, both of Pa., assignors to Jade Corporation, Huntingdon Valley, Pa.

Filed July 12, 1971, Ser. No. 161,812
Int. Cl. B23p 1/08
U.S. Cl. 219—69 G 11 Claims



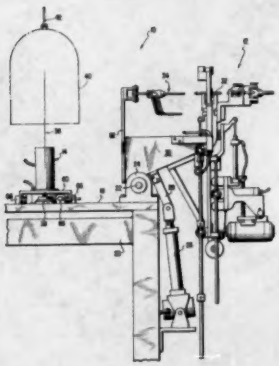
Apparatus for compensating the electrode wear in an electric discharge machine tool wherein an end of electrode travel signal is generated by actuation of a limit switch. The limit switch is actuated by a lead screw which is physically connected to the electrode holding means. The lead screw is moved a predetermined distance away from the limit switch by a motor means on each operation of the electrical discharge machine (EDM).

3,688,075

MECHANICAL/NONMECHANICAL MACHINING CENTER

John A. Cupler, II, 10 Cupler Dr., Cumberland, Md.

Filed Dec. 21, 1970, Ser. No. 100,060
Int. Cl. B23k 15/00
U.S. Cl. 219—121 EB 6 Claims



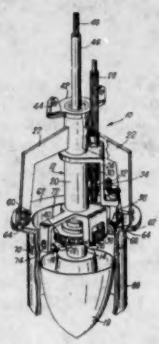
A combination of mechanical and non-mechanical machining capabilities are integrated into a single machining center. Both the mechanical and the non-mechanical machining equipment are mounted for selective movement between a non-working position completely clearing the work area and a working position for conducting machining operations along a common centerline.

3,688,076

WELDING APPARATUS FOR WELDING AN EXTENSION PIECE TO A TUBE

William G. Hill, London, and Robert A. C. Bromwich, Marlow, both of England, assignors to Foster Wheeler Corporation, Livingston, N.J.

Filed June 30, 1970, Ser. No. 51,241
Int. Cl. B23k 9/12
U.S. Cl. 219—125 R 9 Claims



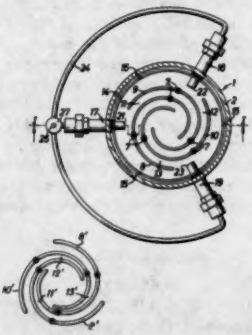
The present invention relates to an electric arc welding torch for welding an extension piece out an open end tubular part which is in an inaccessible position. The torch has a welding head which can be of conventional form and is rotatable relative to a torch body. From the body extend a number of arms which are arranged to hold the extension piece aligned with the torch body. The body also caries a tapered guide which is arranged to fit within the open-ended tubular member and so center and locate the body and extension piece relative to the tubular member. In a preferred embodiment the arms have magnets at the free ends to hold the extension piece until it has been welded in place on the tubular part.

3,688,077

ELECTRODE BOILERS

Stanley Austen Williams, 10 Durlston Road, Poole, England

Filed Jan. 13, 1971, Ser. No. 106,128
Claims priority, application Great Britain, Jan. 27, 1970, 52,586/70
Int. Cl. H05b 3/60
U.S. Cl. 219—284 10 Claims



In a 3-phase electrode boiler comprising a shell and three electrodes of spiral shape nested together within the shell with a spiral gap between each pair of adjacent electrodes, there is provided feed water supply means arranged to direct in the direction of the spiral gap a jet of feed water into the spiral gap between two adjacent electrodes, or preferably into the three

spiral gaps between adjacent pairs of electrodes, for the purpose of flushing out of these gaps salts deposited from the boiler water. In operation the feed water jet flows along the spiral gap between two adjacent electrodes towards the center of the shell to flush out the water already there and so prevent the concentration of salts building up to an undesirably high level. The electrodes may be positioned such that the distance between adjacent electrodes progressively decreases towards the center of the spiral, thus causing the flushing jet to have a progressively increasing velocity towards the center.

3,688,078

CONSTANT-CURRENT HEATING DEVICES FOR FIXED WINDOW SEALS

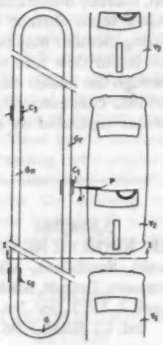
Andre Ferrand, and Michel Bonnefont, both of Billancourt, France, assignors to Regie Nationale des Usines Renault, Billancourt and Automobiles Peugeot, Paris, France

Filed March 31, 1971, Ser. No. 129,822

Claims priority, application France, April 10, 1970, 70/13005

Int. Cl. H05b *3/02*

U.S. Cl. 219—482 **7 Claims**



This device for electrically heating a wire embedded in the molding strip of a fixed window, such as a windshield or the like, for sealing same to the surrounding frame, comprises a movable supply cabinet, a voltage regulator for maintaining a constant current value in said wire, a data processing unit comprising members adapted to deliver orders of an instantaneous or delayed-action nature for controlling in succession preheating and heating control circuits for energizing said wire during two different time periods, and safety members controlling the current value in said wire and the voltage across the terminals through which said wire is connected to the device.

This device is applicable to automotive construction and also to building construction.

3,688,079

WELDING NOZZLE

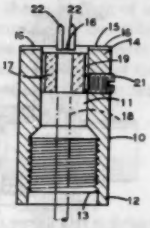
Felix S. Jabsen, 1324 Krise Circle, Lynchburg, Va.

Filed Oct. 30, 1970, Ser. No. 85,541

Int. Cl. B23k *9/00*

U.S. Cl. 219—136 **1 Claim**

A nozzle for a welding device having an arrangement of channels and guides on its annular face for the precise and selective alignment of a welding device to a very small target having extremely thin members in the production of a



reproducible weld on a series of such targets with regard to size, configuration, rigidity and strength.

3,688,080

WELDING

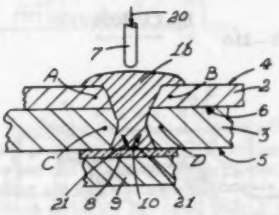
Andrew John Cartwright; Frederick Timothy Cartwright, and Peter Charles St. John Cartwright, all of 56, Old Mutual Bldg., President Street, Germiston, Transvaal, South Africa

Filed Aug. 31, 1970, Ser. No. 68,244

Claims priority, application South Africa, Sept. 8, 1969, 69/6362

Int. Cl. B23k *9/00*

U.S. Cl. 219—137 **9 Claims**



A method of welding wherein molten weld material, directed under the influence of heat along a weld zone extending from one side to the other of a workpiece, is reflected back by a screen located on the other side of the workpiece. The weld material in the zone of the root of the weld and substantially throughout the remainder of the body of weld material is maintained in a molten condition for a period of time sufficient to permit intimate fusion between weld material and parent material at the root and substantially throughout the remainder of the weld. The method is particularly suited for forming button welds. The completed weld has the cross-sectional configuration of an hourglass.

3,688,081

CLEAR VIEWING SCREENS

Pier Gianni Speich, 7/C Via Domenico Chiodo, Genoa, Italy

Filed Nov. 9, 1970, Ser. No. 87,766

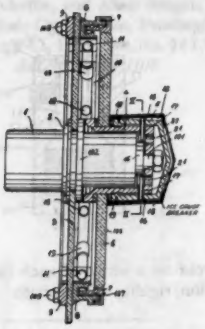
Claims priority, application Italy, Nov. 12, 1969, 7439 A/69

Int. Cl. E06b *3/12*; **H05b** *3/00*

U.S. Cl. 219—203 **5 Claims**

A clear viewing screen for vehicles, particularly for vehicles which have to operate under polar conditions, comprising a fixed screen element, a rotatable disc like screen element mounted in front of the said fixed screen element with the interposition of a labyrinth joint at the periphery of the said rotatable screen element, a motor for driving the said rotatable screen element, a motor for driving the said rotatable screen element, and electric heating elements in the chamber between the fixed screen element and the rotatable screen ele-

ment. Means are also provided on the outer surface of the rotatable screen element for breaking the ice crusts formed on



said screen element, and operated by the rotatable screen element driving motor.

3,688,082

THERMOGRAPHIC COPYING MACHINES

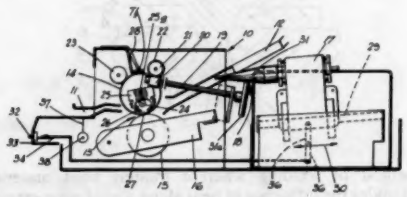
Denis Percy Crane, Solihull, and Edgar Joyce, Sutton Coldfield, both of England, assignors to Ofrex Group Limited, London, England

Filed Feb. 16, 1970, Ser. No. 11,768

Claims priority, application Great Britain, Feb. 22, 1969, 9,644/69

Int. Cl. H05b *1/00*

U.S. Cl. 219—216 **3 Claims**



A thermographic copying machine in which an electrically energized heating source is contained in a hollow radiation transparent roller engaged by a counter-pressure roller to provide a nip through which assemblies of sheets are passed, each such assembly including an original and a heat sensitive sheet, and a control circuit for supplying current to the electrically energized heating source. The control circuit includes a temperature sensing element adjacent to the surface of the hollow roll and in the path of radiant heat from said source and providing an output for reducing current to said source at least partly to counteract the increasing temperature to which sheet assemblies are subjected in passing between the rolls when the machine is in use over an extended period.

3,688,083

ELECTRIC FLUID HEATER

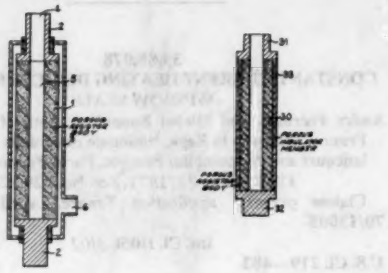
Graham Rice, Reading; Herbert C. Whitby, Brightwell, and Peter Douglas Dunn, Moulsford, all of England, assignors to United Kingdom Atomic Energy Authority, London, England

Continuation of Ser. No. 777,342, Nov. 20, 1968, abandoned. This application July 31, 1970, Ser. No. 60,075

Int. Cl. F24h *1/10*; H05b *3/12*

U.S. Cl. 219—381 **7 Claims**

An electrical resistor heater unit for the heating of liquids including a heater element of porous resistor material located within a casing serves to obstruct the flow path for constraining fluid therein to diffuse into the element through a first surface thereof. The fluid is heated by the element and leaves through a second surface thereof. A porous heat-conducting electrically insulating member having smaller pores than the heater element is disposed about the body first surface and serves as a flow distributor and a pre-heater for both directing fluid to flow through the element and for gradually raising the temperature of the incoming liquid to the temperature at-



tained by the element, thereby minimizing boiling of the liquid externally of the liquid input surface of the member. The porosity of the insulating member may be varied along its axial length to control the liquid flow rate to obtain substantially uniform diffusion through the heater element. The heater element may be divided into concentrically arranged vaporizing and super heating zones separated by a thermally insulating gas gap.

3,688,084

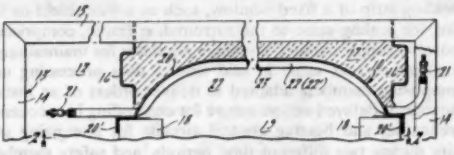
ELECTRIC BROILER HEATING UNIT

Mitchell D. Charneski, Southfield, Mich., assignor to The Detroit Edison Company, Detroit, Mich.

Filed April 8, 1971, Ser. No. 132,279

Int. Cl. H05b *3/06*

U.S. Cl. 219—537 **2 Claims**



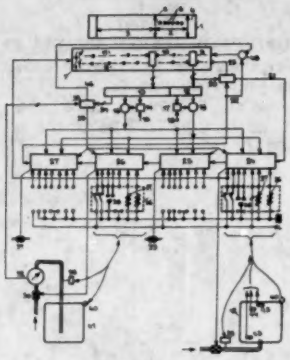
A composite radiating plate and rod heating unit for an electric-heated broiler compartment has a generally flat but arcuate-sided ceiling panel in the form of a rectangular metal sheet whose bottom bears a series of parallel passes of "Calrod" electric heating rod components. These, whether represented by individual lengths electrically jumper-connected at their opposite ends, or as arranged in sets of two or more in a serpentine outline, are non-uniformly spaced from one another in at least some of the successive components of the units, generally increasing in spacing starting at a front or rear pass. They and the thermally conductive sheet panels to which they are fixedly secured are curved downwardly adjacent opposite side margins of the latter to afford a warm dead air ceiling or dome space as installed at the top of a broiler chamber.

3,688,085

SYSTEM FOR CONTROLLING DELIVERIES OF LIQUID PRODUCTS AND THE LIKE

Claude R. Tetar, Paris, France, assignor to L'Electronique Appliquee, Montrouge, France

Filed May 24, 1971, Ser. No. 146,065
Int. Cl. G06k *7/00*; **B67d** *5/10*; **B65d** *5/373*
U.S. Cl. 235—61.6 R **11 Claims**



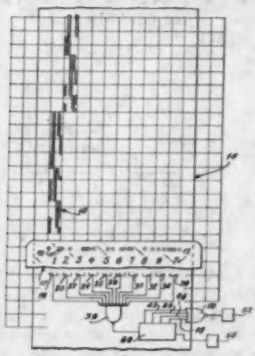
The system comprises as many delivery control circuits as are delivery stations of products and, from each delivery station, the corresponding delivery control circuit may be loaded with data concerning the nature and quantity of the product to be delivered and the special nature of the delivery operation proper. After such settings of delivery control circuits, a prepunched card is introduced into a cardreader of step-by-step operation, each step reading out a product nature code and a product quantity code. Each step activates a logics organization which interrogates the delivery control circuits for identification of the one loaded with corresponding data and activation of the thus identified delivery station.

3,688,086

CHECK DIGIT AND TRANSACTION AUTHORIZATION SYSTEM

Joseph L. Levasseur, St. Louis, Mo., assignor to Simcom Corporation, High Ridge, Mo.

Filed Oct. 28, 1970, Ser. No. 84,817
Int. Cl. G06r *5/00*
U.S. Cl. 235—61.7 B **19 Claims**



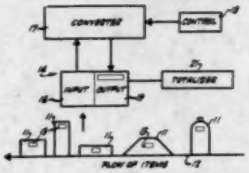
A system for operating on the digits of an identifier such as an account number represented in a coded form by a constant ratio code, said system including means which operate by some preestablished formula to determine if the identifier is a valid identifier and/or has been properly entered, said system also providing a way to verify that persons who use the system have in fact actually used it as they are supposed to and used it properly each time. The present system therefore provides means for evaluating the performance and reliability of those who use equipment in the extending of credit and for other purposes. The programming of the subject system can be varied from time to time to prevent users of the system from being able to outsmart or by-pass use of the system even when making later transactions involving the same identifiers or account numbers.

3,688,087

METHOD AND APPARATUS FOR HANDLING MATERIALS

Joseph D. Howard, 657 Blair Ave., Piedmont, Calif., and William M. Brobeck, 120 Sleepy Hollow Lane, Orinda, Calif.

Continuation of Ser. No. 820,670, June 16, 1959, abandoned. This application Aug. 2, 1968, Ser. No. 749,815
Int. Cl. G06k *1/12*; **G11b** *5/02*; **G06k** *7/10*
U.S. Cl. 235—61.9 R **6 Claims**



A system for handling a large variety of different items to provide automatic price and inventory information. Each different kind, type and size of items or goods carried, for example, in a retail store are separately marked with a distinctive visible coded indicia with only like items bearing like indicia and all like items bearing identical indicia. Control means are provided for applying to a converter having memory means each of the different coded indicia for storage in the memory means thereof and the control means also applies a separate and variable price corresponding to each coded indicia to the converter for storage in the memory means thereof with each price being related to the corresponding coded indicia. A register is provided for registering the coded indicia of items distributed as by sale or the like and for applying such indicia to the converter. The converter includes means for receiving the registered indicia and establishing identity between the instantly registered indicia and previously stored indicia as well as output means for producing the price corresponding to the stored indicia that is identical to the registered indicia. Means are also provided for recording the registered coded indicia and the corresponding price of each registered coded indicia.

3,688,088

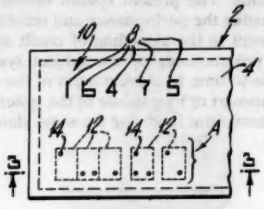
CREDIT CARD VALIDATION SYSTEM USING AN OPAQUE CARD HAVING TRANSLUCENT CODED AREAS

William F. Brown, Wappingers Falls, N.Y., and Ronald J. Goetchius, Charlotte, N.C., assignors to Texaco Inc., New York, N.Y.

Filed Sept. 18, 1970, Ser. No. 73,519
Int. Cl. G06k *21/04*, *7/10*; **H04q** *3/74*
U.S. Cl. 235—61.12 R **3 Claims**

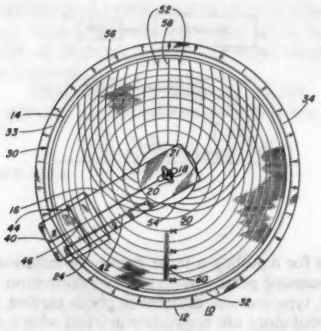
Methodology and apparatus for optically reading, or recognizing, numbers in coded form, on such articles as credit cards

and the like. The article is made of an opaque substance with



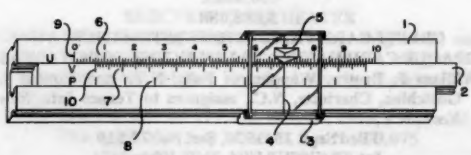
prepositioned, coded, translucent areas forming a pattern corresponding to a coded form of the card number.

3,688,089
TDS SLIDE RULE
Jesse H. Jefferies, 5706 Burlinghall Dr., Houston, Tex.
Filed Feb. 22, 1971, Ser. No. 117,276
Int. Cl. G06c *3/00*
U.S. Cl. 235—88 **9 Claims**



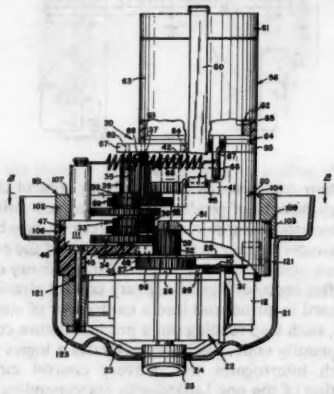
This invention relates to a circular slide rule which is particularly adapted for making time-distance-speed computations such as are required for TDS rallies. The slide rule includes a bottom disc, a top disc, and an indicator, all coaxially mounted for relative rotation. A cursor is slidably mounted on the indicator. A radially extending hairline on the indicator reads off the numbers on a scale disposed on the bottom disc. A transverse hairline on the cursor reads off the numbers on a scale disposed on the indicator, and the cross hair point reads off the numbers on a scale arranged on the top disc.

3,688,090
RANDOM NUMBER GENERATOR
Bayard Rankin, 2853 Coleridge Rd., Cleveland Heights, Ohio
Continuation of Ser. No. 365,626, May 7, 1964. This application Oct. 20, 1969, Ser. No. 867,958
Int. Cl. G06g *1/02*
U.S. Cl. 235—20 R **11 Claims**



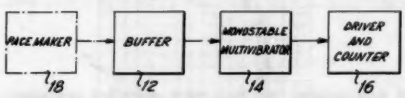
A random number generator having measuring means operable to measure and store an arbitrary measurable first quantity, means for ascertaining a second quantity which is a function of the first quantity and partitioning means for partitioning the second quantity into integral parts plus a remainder, and wherein the remainder is measured by the measuring means to determine a new second quantity to be partitioned. This operation is repeated a predetermined number of times to produce as an end result a quantity which is entirely determined by chance.

3,688,091
ONE WAY DRIVE FOR REMOTE READER REGISTER
Elmer F. Painley, Uniontown, Pa., assignor to Rockwell Manufacturing Company, Pittsburgh, Pa.
Filed Aug. 7, 1970, Ser. No. 62,094
Int. Cl. G06f *7/38;* **B67d** *5/22*
U.S. Cl. 235—92 H **6 Claims**



A meter register readable at the meter site and including one-way driving gearing for an impulse generator transmitting electrical pulse currents for energizing a reader located at a point remote from the meter register.

3,688,092
PORTABLE PACEMAKER PULSE COUNTER
Frederick Shlisky, 253-31 61 Ave., Little Neck, N.Y.
Filed July 23, 1970, Ser. No. 57,722
Int. Cl. A61b *5/02*
U.S. Cl. 235—92 MT **8 Claims**

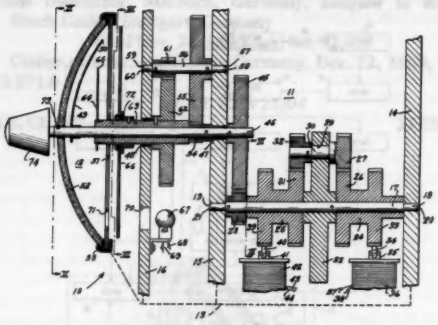


A portable pacemaker pulse counter for recording the number of electrical impulses provided by a pacemaker. The pulse counter has a signal-receiving section for receiving a signal each time an electrical impulse is transmitted to the heart by the pacemaker, and the pulse counter also has a counting section for counting the number of signals received, these signals being transmitted to the counter through a transmission section. The above sections all are combined together into a small, miniaturized, light-weight unit small enough to be carried about comfortably on one's person in a pocket or the like.

3,688,093
COUNTER MECHANISM

Dale J. Warner, 5700 S. Naragarsett, Chicago, Ill.

Filed Feb. 11, 1971, Ser. No. 114,582
Int. Cl. G06m 3/14
U.S. Cl. 235—103.5 R 14 Claims



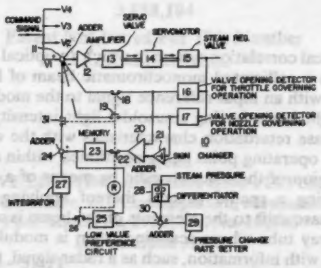
A counter mechanism employs a pair of sun gears which orbit respective ratchet-driven index gears to move a common coupling element differentially about an axis of rotation. The coupling element is carried by a shaft which extends along the axis of rotation and which is provided with a differential angular position in accordance with algebraically additive pulses received by solenoid devices for indexing the index gears. The counter mechanism is provided with a clock-type having a units pointer carried by a rotatable shaft and a hundreds pointer carried by a sleeve which is rotatably carried about the units pointer shaft. The differentially indexed shaft is connected to the units pointer shaft and to the concentric sleeve by gear means to provide a 20:1 ratio for the angular position of the units pointer with respect to the hundreds pointer. A reset knob is provided on the units pointer shaft for manually positioning the units and hundreds pointers.

3,688,094
Patent Not Issued For This Number

3,688,095
STEAM TURBINE CONTROL DEVICES

Tetsuzo Sakamoto, Yokohama-shi; Akiomi Torii, Kamakura-shi; Mituhisa Yokota, Yokohama-shi, and Seiko Sato, Tokyo, all of Japan, assignors to Tokyo Shibaura Denki Kabushiki Kaisha (a.K.a. Tokyo Shibaura Electric Co., Ltd.), Kawasaki-shi, Japan

Filed Jan. 26, 1970, Ser. No. 5,770
Claims priority, application Japan, Feb. 27, 1969, 44/5305
Int. Cl. F01d 17/00
U.S. Cl. 235—151.1 6 Claims



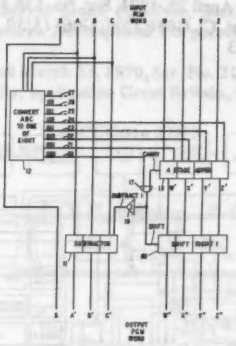
In a steam turbine control device wherein a steam control valve is controlled by a main control system responsive to an opening command signal from a speed control or a load control of the turbine, there are provided a throttle governing feedback circuit and a nozzle governing circuit which are connected in parallel and respond to the opening of the regulator valve to correct the opening thereof and a control circuit operative to gradually vary the difference signal between the feedback signals of the throttle governing and nozzle governing feedback circuits and to feed back the gradually varying difference signal to the main control system to switch the control of the steam regulator valve from the throttle governing operation to the nozzle governing operation without causing rapid increase of the steam flowrate. The control device is also provided with means to detect the rate of change in the steam pressure on the downstream side of the regulator valve.

3,688,096
Patent Not Issued For This Number

3,688,097
DIGITAL ATTENUATOR FOR NON-LINEAR PULSE CODE MODULATION SIGNALS

William Lloyd Montgomery, Little Silver, N.J., assignor to Bell Telephone Laboratories, Incorporated, Murray Hill, N.J.

Filed May 20, 1970, Ser. No. 38,930
Int. Cl. G06f 7/38
U.S. Cl. 235—152 11 Claims



Methods and apparatus for digitally performing six decibel attenuation for a class of non-linear PCM codes including the eight bit, mu = 255 companding law. The bits of this code are S ABC WXYZ, where S is the sign of the signal sample, ABC is the segment code, and WXYZ is the position code. The segment and position codes taken together describe the amplitude of the signal sample. For certain code values, the segment code is decremented; for others, the position code is right shifted. For still others, these steps are combined with a selective incrementation of the position code in order to produce accurate and uniform attenuation.

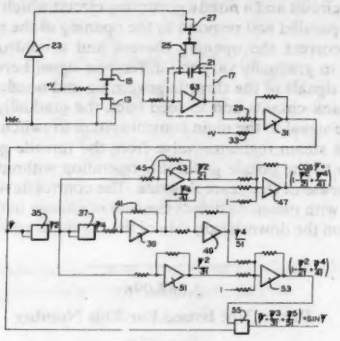
3,688,098
SINE-COSINE FUNCTION GENERATOR USING A POWER SERIES

Thomas Cwynar, and John R. Trzeciak, both of Binghamton, N.Y., assignors to Singer-General Precision, Inc., Binghamton, N.Y.

Filed Jan. 21, 1971, Ser. No. 108,446
Int. Cl. G06g 7/22, 7/26
U.S. Cl. 235—197 4 Claims

A method and apparatus for generating sines and cosines of an angle at high frequencies using power series. By using the

terms computed for cosine series in computing the sine series



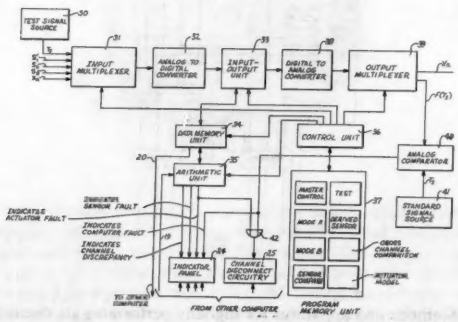
a significant reduction in the number of multipliers required is achieved.

3,688,099

AUTOMATIC CONTROL SYSTEM WITH A DIGITAL COMPUTER

Richard G. Buscher, Woodland Hills, Calif., assignor to Lear Siegler, Inc., Santa Monica, Calif.

Filed April 28, 1971, Ser. No. 138,172
Int. Cl. G05b *1/00*; G06f *15/50*
U.S. Cl. 235—153 **14 Claims**



A redundant flight control system having a pair of digital computers programmed to generate a command signal responsive to the individual outputs of three sensors. Two of the sensors represent a desired parameter and a third sensor represents a different, but related parameter. The computers are programmed as follows:

1. To derive the desired parameter from the sensor representing the related parameter, to compare the three representations of the desired parameter, and to indicate a sensor fault when one of the representations deviates too much from the other two;

2. To produce a resultant signal having a standard value responsive to a test signal applied to the input of the computer and to indicate a computer fault when the resultant signal deviates from the standard value;

3. To produce from a follow-up signal an inverse model response representative of the actuator driven by the command signal, to compare this model response with a representation of the command signal stored in the computer memory, and to indicate an actuator fault when the model response deviates from the command signal representation; and

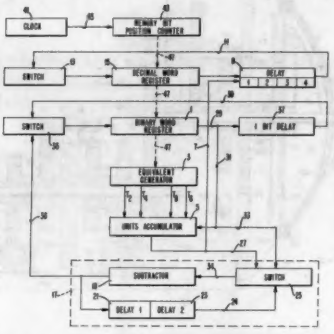
4. To compare the stored representations of the command signals of the two computers and to indicate a discrepancy therebetween.

3,688,100

RADIX CONVERTER

Paul E. Goldsberry, 313 Malabu Circle, Lexington, Ky.

Filed June 30, 1970, Ser. No. 56,099
Int. Cl. G06f *5/02*
U.S. Cl. 235—155 **6 Claims**



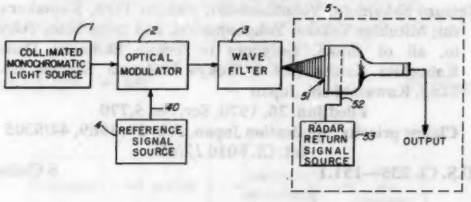
Apparatus for converting a number in a first radix to a number in a second radix is disclosed. Conversion of a binary number to a decimal number is accomplished by adding the low order of the decimal value for each position or ordinal in the binary number which contains a one bit or a number descriptor. Carries in the addition are ignored and the sum forms the low order ordinal in the decimal equivalent of the binary number. The sum is subtracted from the binary number and it is divided by the radix of the output number or ten. The series of operations is repeated until the binary number has been completely converted.

3,688,101

OPTICAL CORRELATION APPARATUS

Harley Barry Henning, Sharon, Mass., assignor to Raytheon Company, Lexington, Mass.

Division of Ser. No. 711,061, March 6, 1968, Pat. No. 3,536,376. This application Oct. 23, 1970, Ser. No. 83,662
Int. Cl. G06g *9/00*; G02b *27/38*
U.S. Cl. 235—181 **9 Claims**



An optical correlation system in which an optical modulator modulates a collimated monochromatic beam of light in accordance with an input reference signal to the modulator. An output light beam having sinusoidal light intensity variation versus phase retardation characteristics with the modulation quiescent operating point being positioned within a predetermined region of the characteristic by means of a fixed wave filter having a spatial pattern thereof applying amplitude and/or phase shift to the elements of the beam is applied to a cathode ray tube whose scanning beam is modulated in accordance with information, such as a radar signal, to be correlated with the reference signal source as modified by the modulator and wave filter to produce an output having a multiplication of the two signals.

3,688,102

Patent Not Issued For This Number

3,688,103

VEHICLE HEADLIGHT

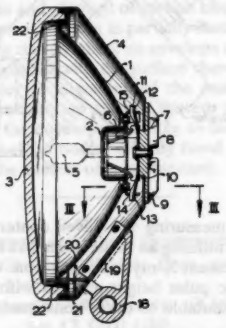
Hans Daumuller, Marbach, Germany, assignor to Robert Bosch GmbH, Stuttgart, Germany

Filed Nov. 24, 1970, Ser. No. 92,439

Claims priority, application Germany, Dec. 12, 1969, P 19 62 271.0

Int. Cl. F21v *13/04*

U.S. Cl. 240—41.3 **21 Claims**



In a vehicle headlight housing has an open side and an opposite closed side, and in the open side is received a replaceable lighting unit comprising a reflector having a light-emitting opening, a bulb-socket mounted on the reflector, a light bulb in the socket, and a protective lens extending across and closing the opening of the reflector. Releasable securing means is provided for releasably securing the lighting unit to the housing and comprises abutment means fast with the reflector externally thereof and spring means on the housing movable between an inoperative position and an operative position in which latter it lockingly engages the abutment means, with actuating means being provided for moving the spring means to its operative position.

3,688,104

Patent Not Issued For This Number

3,688,105

COVE LIGHTING AND HEATING FIXTURE

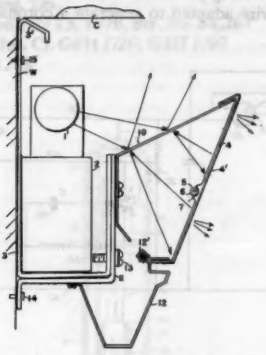
Anthony J. Governale, 210 Crabapple Rd., Manhasset, N.Y.

Filed March 16, 1970, Ser. No. 19,648

Int. Cl. H05b *33/12*

U.S. Cl. 240—51.11 **3 Claims**

A combination room lighting and heating fixture for cove mounting. A fluorescent lighting fixture is integrally connected to a radiant heating panel assembly which includes a reflector and the entire assembly is adapted to be mounted on a wall of a room adjacent the ceiling thereof to provide in-



direct lighting and radiant heating for the room. The unit is modular so that a plurality of units may be connected in series.

3,688,106

MEASURING THE DENSITY, VELOCITY AND MASS FLOW OF GASES

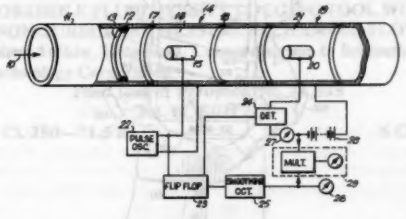
Thomas John Stirrat Brain, Hamilton, Scotland, assignor to National Research Development Corporation, London, England

Filed March 23, 1970, Ser. No. 21,940

Claims priority, application Great Britain, March 28, 1969, 16,537/69

Int. Cl. G01n *23/12*

U.S. Cl. 250—43.5 FC **17 Claims**



A meter and a method of measuring the velocity of gas in a duct are described, and gas density and mass flow may also be measured. In one form the meter has an ion source and two ion collectors, so that gas in the duct is first ionized and then passes the collectors. The source and the collectors are devised to present little or no impedance to gas flow. A voltage pulse is applied to the first collector and the interval between this pulse and the resulting effect in the number of ions collected at the second collector is measured to give gas velocity. Density measurement is by determining the number of ions collected between pulses at the second collector, and mass flow is obtained by forming the product of velocity and density.

3,688,107

ELECTROSTATOGRAPHIC CHARGING APPARATUS

John M. Schneider, Fairport, and John Lennon, Rochester, both of N.Y., assignors to Xerox Corporation, Rochester, N.Y.

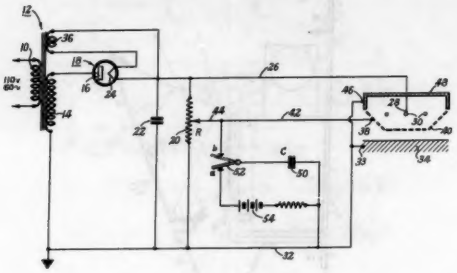
Filed Oct. 26, 1970, Ser. No. 84,005

Int. Cl. G03g *15/00*

U.S. Cl. 250—49.5 ZC **9 Claims**

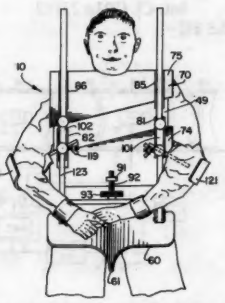
A corona generating apparatus is provided comprising a back-up plate and screen wires, at least one corona discharge

wire positioned therebetween, adapted to be mounted in closely spaced relation with an electrostatographic plate to uniformly apply an electrostatic charge onto said plate, a corona-generating potential source connected to said corona discharge wire adapted to generate a corona discharge from



said corona wire, and a second potential source adapted to be connected to said screen wires and impress a time or position varying voltage upon said screen wires permitting high initial charging current to flow thereby rapidly charging said plate while limiting the ultimate charge applied thereto.

3,688,108
PORTABLE FILM HOLDER
Clay Earnest Hawkins, 1225 E. Stanford, Springfield, Mo.
Filed Sept. 4, 1970, Ser. No. 69,554
Int. Cl. G03b *41/16*
U.S. Cl. 250—50 **9 Claims**

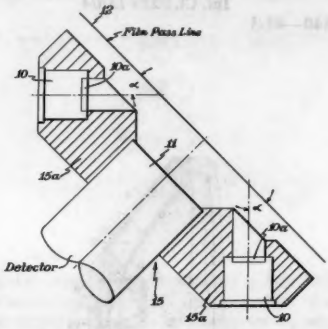


The present invention relates to a portable X-ray film holder for use with a patient in a sitting position and which X-ray film holder is provided with a platen adapted to be rested on the lap of the patient and with an upstanding film holder section normal to the platen. The film holder section is divided into two parts slideable on an upstanding member and arranged to hold an X-ray film negative between them. Adjustment is provided for moving the film holder parts mounting the X-ray film slide vertically on the upstanding member whereby the film can be adjusted to a position to accommodate the patient and the X-ray operator.

3,688,109
X-RAY DIFFRACTION GRATING CRYSTALS
Fred R. Gamble, Los Altos, Calif., assignor to Synvar Associates, Palo Alto, Calif.
Filed July 14, 1970, Ser. No. 54,847
Int. Cl. G01n *23/20*
U.S. Cl. 250—51.5 **30 Claims**

The use of structurally layered heavy metal chalcogenides as diffraction grating crystals in X-ray optical assemblies such as X-ray fluorescence spectroscopy, the chalcogen being selected from sulfur, selenium and tellurium, or mixtures thereof. Chalcogenides intercalated with inorganic and organic materials are contemplated.

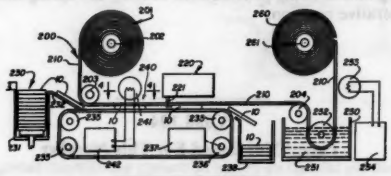
3,688,110
PHOTOGRAPHIC EMULSION SILVER GAGE
William A. N. Severance, Newark, Del., assignor to E. I. du Pont de Nemours and Company, Wilmington, Del.
Filed May 20, 1970, Ser. No. 38,929
Int. Cl. G01n *23/22*
U.S. Cl. 250—51.5 **4 Claims**



Apparatus measuring the silver content in photographic film emulsion utilizing an Americium-241 radioisotope source causing fluorescent X-ray emissions from the emulsion silver, and electronic pulse height analysis with compensation for radiation attributable to other constituents of the film than silver.

3,688,111
Patent Not Issued For This Number

3,688,112
ADDRESSING APPARATUS
Ronald I. Morley, Berkeley, Calif.; Rayond W. Biernat, St. Paul, Minn., and Arnold J. Smidt-Hayer, Falls Church, Va., assignors to Dymo Industries, Inc., Berkeley, Calif.
Division of Ser. No. 643,718, June 5, 1967, Pat. No. 3,607,527.
This application Feb. 18, 1971, Ser. No. 116,552
Int. Cl. B41l *45/00*
U.S. Cl. 250—65 T **9 Claims**



There is disclosed an addressing system including an addressing apparatus and addressing methods and materials used therein. A set of master cards is provided formed of porous tab card stock impregnated with a sensitizer vaporizable at 100° to 160° C. and having a selected area on one face thereof for the address in infrared absorbing ink; as disclosed, the master card is made by passing the porous tab card stock through a bath containing the sensitizer and a solvent therefor, after which the solvent is evaporated. The set of master cards is then employed to provide a master tape that is a strip of non-porous release material that is oleophobic and transparent to infrared radiation, and carrying thereon reverse reading copies of the

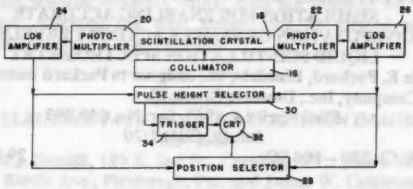
addresses in the form of bodies of partially fused toner applied to one side of the master tape; the addresses are transferred from the master cards to the master tape utilizing a novel apparatus and method wherein a printing station is provided having a first source of infrared radiation thereat, first feed mechanism for feeding the master cards sequentially to the printing station and a second feed mechanism for feeding the master tape to the printing station to position a predetermined portion of the master tape immediately adjacent to the address on a master card positioned at the printing station, thereafter operating the first source of infrared radiation to vaporize from the master card sensitizer in areas corresponding to the address thereon onto the one surface of the master tape, applying a toner to the master tape to adhere toner to the sensitizer in areas corresponding to the address, and thereafter exposing the master tape carrying the powdered toner to a second source of infrared radiation for at least partially fusing the toner to provide a reverse reading copy of the address on the master tape. The toner comprises a vehicle body of wood resin and polymerized resin, modifiers of polyamide resin and a hydrocarbon resin and pigment of carbon black. The master tape with the addresses thereon in partially fused toner is then fed to an addressing station where an envelope or other article to be addressed is placed with the surface thereof against the partially fused toner on a section of the master tape after which heat and pressure are applied thereto to transfer the bodies of toner to the envelope and fully to fuse the toner to provide on the envelope bodies of fully fused toner in areas corresponding to the address on a master card.

3,688,113

TOMOGRAPHIC RADIATION SENSITIVE DEVICE

Floro D. Miraldi, Cleveland Heights, Ohio, assignor to Case Western Reserve University

Filed June 22, 1970, Ser. No. 48,166
Int. Cl. G01t 1/20
U.S. Cl. 250—71.5 R **20 Claims**



A radioisotope device having a collimator delimits radiation from a source. A scintillation crystal having a rectangular cross-section and a generally elongated shape receives radiation after it passes through the collimator and changes it to visible light at each point by a process known as scintillation. Photomultiplier tubes at each end of the scintillation crystal convert the light to electrical pulses. The amplitudes of electrical pulses are converted to logarithms of the amplitudes and summed. A pulse height selector chooses only the sums of those logarithms desired for observation. The logarithms of the amplitudes are also subtracted to find the location of the scintillation in the scintillation crystal.

Means are also provided for moving the source of radiation relative to the collimator. A recording means stores information concerning the relative positions of the source and the collimator during the time radiation is received. Information fro a plurality of scans allows a determination of a pattern of the radiation at different depths and areas within the source.

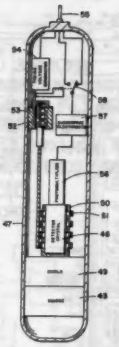
It is also possible to use a plurality of collimators and scintillation crystals and a single scan to determine radiation patterns at multiple depths within the source.

3,688,114

DUAL PURPOSE RADIOACTIVITY WELL LOGGING DETECTOR SYSTEM

Arthur H. Youmans, Houston, Tex., assignor to Dresser Industries, Inc., Dallas, Tex.

Filed July 13, 1970, Ser. No. 54,267
Int. Cl. G01t 1/20; G21f 1/00
U.S. Cl. 250—71.5 R **13 Claims**



A well logging system that utilizes a determination of the lifetime of neutrons in the formations surrounding a well bore includes a dual purpose detector. The detector system includes a movable shield positioned to exclude neutron radiation from a CsI crystal. Means are provided to displace the shield and the system is synchronized with a recorder.

3,688,115

BOREHOLE FLUID DENSITY LOGGING TOOL WITH NON-TURBULENT MEASURING CHAMBER FLOW

Stephen Antkiw, Ridgefield, Conn., assignor to Schlumberger Technology Corporation

Filed June 8, 1970, Ser. No. 44,393
Int. Cl. G01t 1/20
U.S. Cl. 250—71.5 R **6 Claims**

A specific embodiment of the invention provides an improved fluid density measuring device for use in producing oil wells. Density is determined by forcing the well fluid to pass through a chamber in the device. The fluid attenuates a beam of gamma radiation that traverses the chamber, the relative changes in the beam intensity providing a measure of the density in question. Streamline surfaces and passageways leading into and out of the chamber eliminate turbulent flow conditions within the measuring chamber and thereby establish the basis for a substantially more accurate log of the production fluid density.

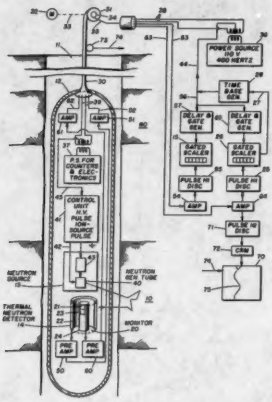
3,688,116

Patent Not Issued For This Number

3,688,117
METHOD OF AND SYSTEM FOR INDIRECTLY MONITORING THE OUTPUT OF A PULSED NEUTRON SOURCE

Wyatt W. Givens, Dallas, Tex., assignor to Mobil Oil Corporation

Filed May 18, 1970, Ser. No. 38,225
Int. Cl. G01t 3/00
U.S. Cl. 250—83.1 5 Claims

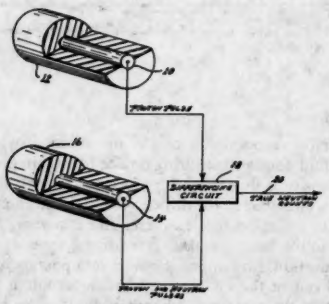


The specification discloses a borehole tool for assaying for uranium and having a pulsed neutron source of the accelerator type and a detector for detecting delayed fission neutrons. In operation, the source is periodically actuated to produce very short neutron bursts having a duration of a few microseconds. Located adjacent the source is a target which emits delayed radiation when irradiated with neutrons from the source. A detector is employed to detect the delayed radiation emitted from the target to obtain an indirect measure of the neutron output produced by the source.

3,688,118
SELECTIVE NEUTRON SENSOR

Eugene F. Martina, Los Angeles, Calif., assignor to The United States of America as represented by the Secretary of the Air Force

Filed Feb. 25, 1970, Ser. No. 14,123
Int. Cl. G01t 3/00
U.S. Cl. 250—83.1 6 Claims

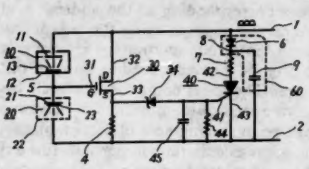


A selective neutron sensor apparatus for selectively detecting a burst of neutrons in a space ionizing radiation environment containing various energetic charged particles utilizing two substantially similar detectors. One of the detectors is sensitive to both charged particles and neutrons while the other is sensitive to charged particles only. A differencing circuit receiving the outputs from the two detectors provides an output which represents the true neutron count.

3,688,119
IONIZATION SMOKE DETECTOR

Akihiro Kobayashi, Fujisawa, Japan, assignor to Nittan Company, Limited, Tokyo, Japan

Filed July 23, 1970, Ser. No. 57,554
Claims priority, application Japan, July 24, 1969, 44/57979; Aug. 26, 1969, 44/66839
Int. Cl. G08b 17/10
U.S. Cl. 250—83.6 FT 4 Claims

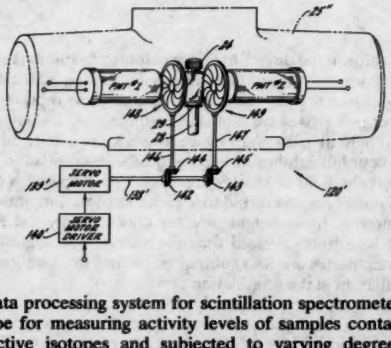


An ionization smoke detector having open and closed ionization chambers each having at least two electrodes and a radioactive source. The electrodes are connected in series across a voltage supply and the change of impedance of the open ionization chamber is detected by a field effect transistor which in turn fires a silicon controlled rectifier. The silicon controlled rectifier is provided with a holding circuit so that when utilizing a pulsating voltage, the silicon controlled rectifier will be maintained in a conductive state even though the pulsating voltage periodically approaches zero. The invention further contemplates means for controlling the current through the source-drain path of the field effect transistor so that wide voltage fluctuations will not damage the transistor or produce erroneous alarm signals.

3,688,120
DATA PROCESSING SYSTEM EMPLOYING QUENCH SIMULATION FOR ENABLING ACCURATE COMPUTATION OF SAMPLE ACTIVITY LEVELS IN LIQUID SCINTILLATION SPECTROMETRY

Lyle E. Packard, Hinsdale, Ill., assignor to Packard Instrument Company, Inc., Downers Grove, Ill.

Filed April 14, 1967, Ser. No. 630,892
Int. Cl. G01t 1/20
U.S. Cl. 250—106 SC 29 Claims



A data processing system for scintillation spectrometers of the type for measuring activity levels of samples containing radioactive isotopes and subjected to varying degrees of quench, including methods and apparatus for imposing a controlled simulated quench condition in each sample which, when added to the actual internal quench condition of the sample, creates an effective quench condition equal to a known predetermined actual quench condition for which counting efficiency is known with a high degree of accuracy.

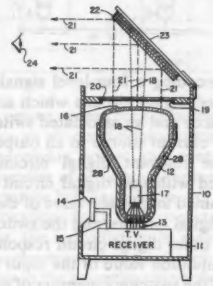
whereby true activity levels can be accurately computed in decay events per minute without incurring statistical errors inherent in interpolation and extrapolation techniques employed with conventional quench correlation data. Various methods and apparatus are described for creating a controlled simulated quench for each sample, together with an automatic computational system which permits direct display of activity levels in units of decay events per minute.

3,688,121

SHIELDED OPTICAL SYSTEM FOR VIEWING AN ILLUMINATED DEVICE PRODUCING PENETRATING RADIATION

John Nash Ott, Sarasota, Fla., assignor to John Ott Laboratories, Inc.

Filed Sept. 9, 1970, Ser. No. 70,731
Int. Cl. G21f 3/00
U.S. Cl. 250—108 R **5 Claims**



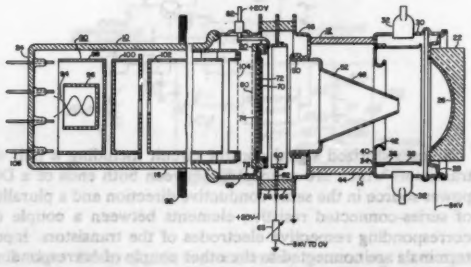
To eliminate penetrating radiation hazard from high-voltage cathode-ray tubes used in television sets, a reflector disposed in the radiation beam reflects visible light to a viewer outside the path of the beam. Radiation penetrating the reflector is absorbed by a shield on the back of the reflector. Additional shielding adsorbs radiation which does not impinge on the reflector, whereby the tube image may be viewed with complete protection from radiation.

3,688,122

AN ELECTROSTATIC FOCUSED ELECTRON IMAGE DEVICE

Vincent J. Santilli, 159 E. 2nd St., Corning, N.Y.; James Vine, 100 Biddle Ave., Pittsburgh, Pa., and James W. Cotterman, 100 Bowman Hill Terrace, Horseheads, N.Y.

Filed April 16, 1968, Ser. No. 721,733
Int. Cl. H01j 31/50
U.S. Cl. 250—213 VT **4 Claims**



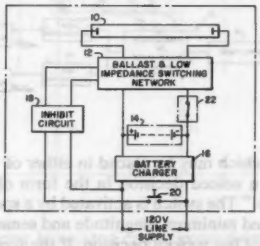
An electron image device having an electron optical system including a photocathode element capable of converting a radiation image into an electron image. The electron image generated by said photocathode is focused by a cylindrical focusing system onto a substantially flat target surface. The cylindrical focusing system includes an anode electrode positioned intermediate said photocathode and said target and is the primary electrode for a main lens for focusing the electron image onto the target. A distortion correction electrode is positioned intermediate the anode and the target for correcting distortion within the image. The distortion correction electrode is electrically isolated from both the anode and the target and is provided with an adjustable voltage source for correcting the distortion within an image under different operating conditions.

3,688,123

EMERGENCY FLUORESCENT LIGHTING APPARATUS

Alec H. B. Walker, Trafford, Pa., assignor to Westinghouse Electric Corporation, Pittsburgh, Pa.

Filed March 17, 1971, Ser. No. 125,117
Int. Cl. H02j 7/00
U.S. Cl. 307—66 **6 Claims**



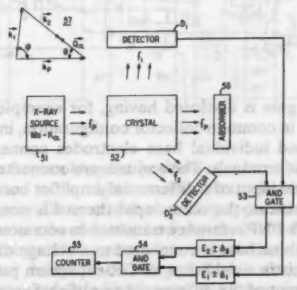
Fluorescent lamp apparatus for emergency lighting comprises a battery-operated low-impedance transistor network which when energized develops square waves of voltage. The generated voltage is applied across an LC circuit. The lamp is connected in parallel with one of the elements of the LC circuit. The very high voltage initially generated across the individual elements of the LC circuit causes the lamp to strike, and after operation of the lamp is initiated, the current through the lamp is constant for any given applied battery voltage.

3,688,124

SPATIALLY PERIODIC NONLINEAR STRUCTURES FOR FREQUENCY CONVERSION OF ELECTROMAGNETIC ENERGY

Isaac Freund, Elizabeth, and Barry F. Levine, Westfield, both of N.J., assignors to Bell Telephone Laboratories, Incorporated, 2, Murray Hill, N.J.

Filed April 30, 1969, Ser. No. 820,472
Int. Cl. H03f 7/04
U.S. Cl. 307—88.3 **5 Claims**



This disclosure describes the use of spatially periodic media which are nonlinear in response to electromagnetic waves.

Various devices which perform second harmonic generation, mixing, and parametric processes are disclosed utilizing these media. The media are oriented with respect to the input waves such that the nonlinear analogue of Bragg's law is satisfied. In this manner, the output waves will have predetermined arbitrary angles with respect to the input waves, depending upon the orientation of the media with respect to the input.

3,688,125

Patent Not Issued For This Number

3,688,126

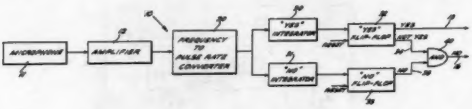
SOUND-OPERATED, YES-NO RESPONSIVE SWITCH

Paul R. Klein, 32622 Adriatic Drive, Laguna Niguel, Calif.

Filed Jan. 29, 1971, Ser. No. 110,966

Int. Cl. H01h *35/24*

U.S. Cl. 307—116 **6 Claims**



A switch which may be placed in either of two positions in response to a voiced decision in the form of the two words "yes" or "no." The switch is activated by a spoken decision of predetermined minimum magnitude and senses the frequency distribution of the spoken decision. If the frequency distribution of the spoken decision indicates the presence of sibilant noise, as strongly present in the word "yes," the switch is placed in one position. If the frequency distribution of the spoken decision indicates the absence of sibilant noise, as is the case with the word "no," the switch is placed in the other position.

3,688,127

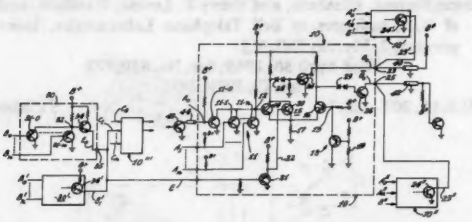
DIGITAL CIRCUIT LOGIC

Gene Barrack Potter, Woodland Hills, and Ronald Holt Reeder, Tustin, both of Calif., assignors to Xerox Data Systems, Inc., El Segundo, Calif.

Filed March 29, 1971, Ser. No. 128,828

Int. Cl. H03k *19/08*

U.S. Cl. 307—207 **4 Claims**



A logic gate is disclosed having, for example, plural PNP transistors in common collector configuration, interconnected emitters and individual base electrodes connected to logic signal input terminals. The emitters are connected to a base as defining one input of a differential amplifier constructed from NPN transistors, the other input thereof is connected to the emitter of a PNP reference transistor in common collector circuit and whose base is connected to a voltage divider. A third NPN transistor establishes an OR-expansion point parallel to the first input of the differential amplifier. Separate NPN output transistors for each branch of the differential amplifier in common emitter circuit realize concurrently AND and NAND functions.

3,688,128

ARRANGEMENT FOR DECODING A FOUR-LEVEL SIGNAL

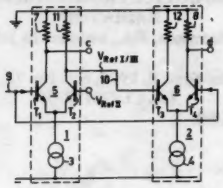
Hendrik Arie Van Essen, and Arie Slob, both of Emmasingel, Eindhoven, Netherlands, assignors to U.S. Philips Corporation, New York, N.Y.

Filed March 25, 1971, Ser. No. 128,341

Claims priority, application Netherlands, April 18, 1970, 7005644

Int. Cl. H03k *5/20*

U.S. Cl. 307—235 **5 Claims**



A device for decoding a four-level signal comprising two mutually connected digital circuits which are each provided with a current source and an associated switching member so as to connect the current source to an output impedance associated with the relevant digital circuit, the switching member associated with one digital circuit responding to a previously determined amplitude value of the input signal applied to the two digital circuits, and the switching member associated with the other digital circuit responding to a certain first or second amplitude value of the input signal dependent on the position of the switching member of the first digital circuit.

3,688,129

SIGNAL CONTROL CIRCUIT

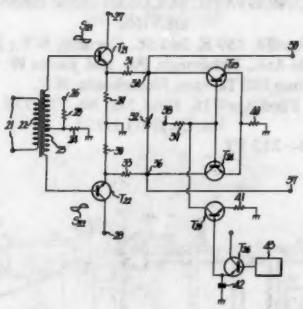
Yoshio Ishigaki, and Hajime Shinoda, both of Tokyo, Japan, assignors to Sony Corporation, Tokyo, Japan

Filed Aug. 21, 1970, Ser. No. 65,927

Claims priority, application Japan, Aug. 26, 1969, 44/67767; Aug. 26, 1969, 44/67768

Int. Cl. H04m *5/44*; H03g *3/30*; H03k *17/26*

U.S. Cl. 307—240 **2 Claims**

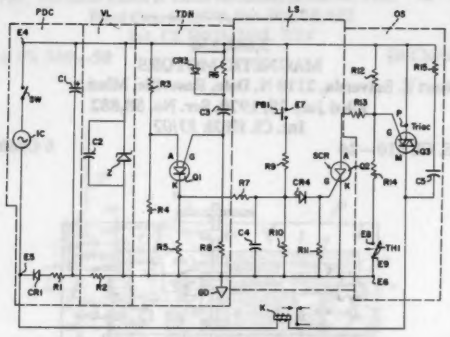


A transistorized signal control circuit including a pair of transistors which are connected between both ends of a DC power source in the same conductive direction and a plurality of series-connected resistive elements between a couple of corresponding respective electrodes of the transistors. Input terminals are connected to the other couple of corresponding respective electrodes of the transistors and output terminals are connected to connecting points between the series-connected resistive elements. A signal supplied from the input terminals and derived from the output terminals is controlled its amplitude without being changed its DC voltage level.

3,688,130
CONTROL SYSTEM

George J. Granieri, 203 Carlton Club Dr., Piscataway, N.J.

Filed Feb. 3, 1971, Ser. No. 112,232
Int. Cl. H01h 47/32, 47/18; H03k 17/28
U.S. Cl. 307—252 F 18 Claims

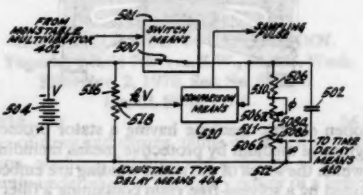


Covers an AC power system for operating and controlling a heating system, or an air-conditioning system, or any like arrangement for supplying power and controlling the power delivered to a plurality of separate apartments or rooms of a building or to separate buildings. If the AC power is removed from all of the locations for a long predetermined period of say three minutes, the individual units may not be re-started until a second shorter interval of time, such as thirty seconds, has elapsed, unless in the meantime the temperature in the regions of the several units has reached a predetermined level. Notwithstanding the temporary removal of the AC power from all of the units, the equipment nevertheless will supply power for the automatic control of the apartments or rooms or buildings at predetermined temperatures, such as 50 degrees, for a heating system. Thus, the arrangements will provide automatic shutdown for all of the several units while allowing random pickup or start up of any or all of the units, and, furthermore, after the equipment has been shut down, predetermined temperature conditions will be controlled and maintained at all times in the several units.

3,688,131
TIME DELAY DEVICE

Charles J. Hirsch, Princeton, N.J., assignor to RCA Corporation

Division of Ser. No. 746,600, July 22, 1968, Pat. No. 3,534,399. This application March 16, 1970, Ser. No. 24,464
Int. Cl. H03k 17/28
U.S. Cl. 307—293 3 Claims

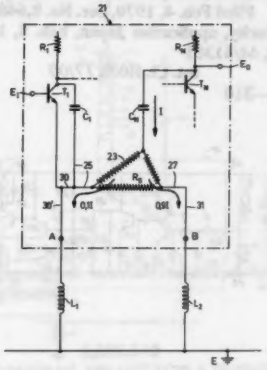


A time delay circuit for accurately generating an output pulse a preselected time after the occurrance of a trigger pulse. The preselected time may be continuously varied from a predetermined minimum value to a predetermined maximum value. This time delay circuit is particularly suitable for use in the area navigation system disclosed herein.

3,688,132
A HIGH FREQUENCY INTEGRATED CIRCUIT HAVING CIRCUIT ELEMENTS IN SEPARATE AND MUTUALLY SPACED ISOLATION REGIONS

Brian Gill, 10 Matthews St., Reigate, and Kenneth William Moulding, 51 Behams Dr., Horley, both of England

Filed Aug. 13, 1970, Ser. No. 63,433
Claims priority, application Great Britain, Sept. 11, 1969, 44,951/69
Int. Cl. H03k 17/00; H01l 19/00
U.S. Cl. 307—303 13 Claims

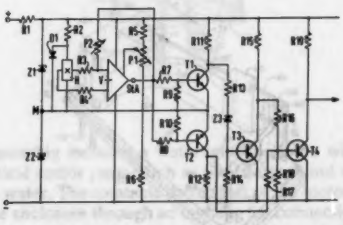


A semiconductor integrated circuit comprising a semiconductor layer having isolation regions forming *p-n* junctions with the adjacent regions of the layer. The isolation regions are contacted at one surface by electrical connections to which suitable potentials can be applied to reverse-bias p-n junctions between the isolation regions and the adjacent regions and mutually electrically isolate regions of circuit elements present in the layer.

3,688,133
CIRCUIT ARRANGEMENT FOR DETERMINING THE POSITION OF A MOVABLE OBJECT

Dieter Flachsbarth, Steinbruchweg 10, Ruckersdorf, Germany

Filed Oct. 12, 1971, Ser. No. 188,102
Claims priority, application Germany, Oct. 13, 1970, P 20 50 127.3
Int. Cl. H03k 17/00
U.S. Cl. 307—309 6 Claims



In a system for tracking the position of a movable object, a magnet attached to the object causes current flowing through a semi-conductor element of the tracking apparatus to shift its position in the semi-conductor body by the Hall effect and to generate thereby a Hall potential on output electrodes of the semi-conductor body. The Hall potential is thereafter amplified and furnished to indicating or tracking equipment. The loss of amplifier output signal as the Hall potential approaches 0 and, passing through its null, rises to the amplifier threshold voltage is avoided in a circuit arrangement supplying the am-

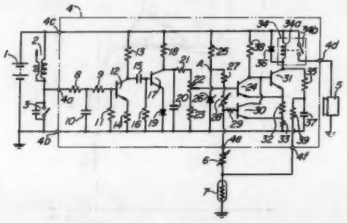
plifier output potential to a pair of complementary type transistors cross-coupled to a following pair of output transistors in such a way that one of the output transistors is blocked at all times except during the null of the Hall potential.

3,688,134

CONTROL DEVICE FOR THE COOLING SYSTEM OF AN AUTOMOBILE

Hisashi Yonezu, Aichi, Japan, assignor to Nippondenso Kabushiki Kaisha, Kariya-shi, Aichi-ken, Japan

Filed Feb. 4, 1970, Ser. No. 8,648
Claims priority, application Japan, Feb. 5, 1969, 44/8948; May 5, 1969, 44/41381
Int. Cl. H03k 17/00
U.S. Cl. 307—310 **4 Claims**



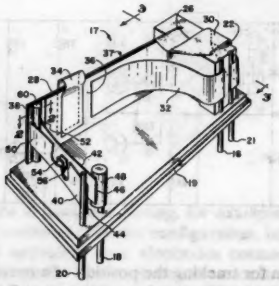
An electric circuit for the automatic control of the cooling system of an automobile, in which a negative resistance element such as a thermistor is incorporated as the temperature detector, and the circuit is designed so as to prevent the frosting of the cooling system due to excessive cooling which may occur if the maximum resistance of the temperature control resistor happens to be excessively high, and further to relieve the automobile engine from the burden of the cooling system during low speed operation of the engine.

3,688,135

PIEZOELECTRICALLY ACTUATED LEVER SWITCH

Arthur J. Koda, Morton Grove, and Charles E. Riedel, Villa Park, both of Ill., assignors to C. P. Clare & Company, Chicago, Ill.

Filed Oct. 9, 1970, Ser. No. 79,600
Int. Cl. H04r 17/00
U.S. Cl. 310—8.5 **13 Claims**



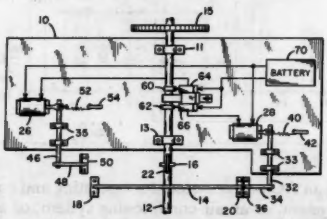
A piezoelectric motor is coupled to a pair of electrical contacts by a pair of buckled springs which are called parabolic or arcuate levers. Each parabolic lever carries a contact located at the midpoint of its length. The parabolic levers are positioned adjacent one another and are mounted between the piezoelectric motor and a pair of stationary electrical terminals in such a manner as to be slightly buckled towards each other. When a potential is impressed upon the motor, the buckle in the parabolic levers is increased until the electrical contacts are forced together. The parabolic levers move the contacts much farther than the distance through which the piezoelectric motor moves but press the contacts together with far more force than could be developed by a conventional lever arrangement having the same overall motional advantage.

3,688,136

MAGNETIC MOTORS

Robert E. Salverda, 2118 N. Dale, Roseville, Minn.

Filed July 28, 1970, Ser. No. 58,882
Int. Cl. H02k 33/02
U.S. Cl. 310—24 **6 Claims**



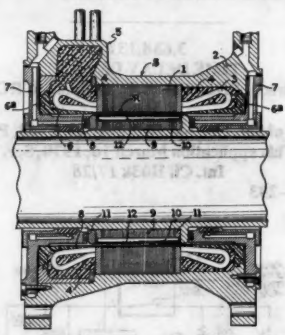
An intermittently powered motor wherein solenoid activated magnets are periodically moved to repel magnets mounted on an output shaft. The solenoids are adjustably timed by cams on the output shaft.

3,688,137

OPEN ELECTRIC MACHINE FOR OPERATING IN AN AGGRESSIVE MEDIUM

Jean Filhol, Nantes, France, assignor to Etablissements Brissonneau et Lotz, Paris, France

Filed May 3, 1971, Ser. No. 139,388
Claims priority, application France, May 5, 1970, 7016414
Int. Cl. H02k 1/04
U.S. Cl. 310—43 **14 Claims**

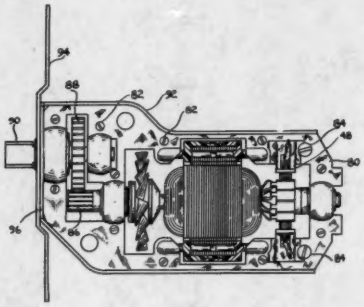


An open electric machine having a stator protected from the aggressive medium by protective means including a coating in which the loops of the stator winding are embedded and constituted by a solvent-free resin containing a filler and having good heat conductivity, a bonding and heat insulating sheath on the coating and on the bore of the stator laminations and constituted by a homogeneous plastics material containing a filler and having a coefficient of thermal expansion in the neighborhood of that of the stator laminations. A fluidtight covering on the sheath and composed of a polyamide-base material radially in contact with the end walls of the machine frame.

3,688,138
SUBFRAME FOR A POWER TOOL EMPLOYING TWO PLATE-LIKE ELEMENTS WITH CUT OUT PORTIONS FOR MOTOR AND TRANSMISSION

Anthony Jacyno, Aurora, and Grover P. Holther, Mount Prospect, both of Ill., assignors to G. W. Murphy Industries, Inc., Portable Electric Tools Division, Houston, Tex.

Filed Oct. 6, 1970, Ser. No. 78,432
Int. Cl. H02k 7/08, 7/14
U.S. Cl. 310—50 16 Claims



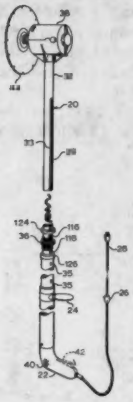
A subframe for a motor and a transmission to be employed in a portable power tool. The subframe is formed of two plate-like elements that are substantial mirror images of one another containing complementary cut out portions for receiving the motor and transmission and which are secured together to define the subframe. Each plate-like member includes complementary struck out portions for receiving bearings for mounting rotating parts of the transmission and the motor. The recesses may be semi-spherical for receiving spherical bearings or cylindrical for receiving sleeve or cylindrical or ball bearings. The plate-like members may be secured together by any of a variety of means such as sheet metal screws, struck metal tabs, spot welding or adhesives. The subframe may include a rotary output or may mount within its confines a mechanism for converting rotary motion to any desired type of motion as for example, reciprocating motion. Alternately, a subframe having a rotary output shaft may be employed in conjunction with an adaptor for converting rotary motion to reciprocating motion so that a single type of subframe may be employed in conjunction with an adaptor for converting rotary motion to reciprocating motion so that a single type of subframe may be employed in power tools requiring both rotary outputs and reciprocating outputs.

3,688,139
HAND-HELD MULTI-PURPOSE TOOL

Frank S. Yaguchi, 14654 7th Ave. S.W., Seattle, Wash.

Filed Nov. 2, 1970, Ser. No. 85,895
Int. Cl. H02k 7/14
U.S. Cl. 310—50 16 Claims

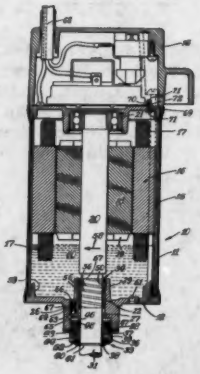
Pruning of trees and shrubs, tilling of garden top soils, and preparation, washing, finishing and polishing of surfaces are conveniently undertaken as the rotary power of a lightweight, high performance electric motor, secured to an extendable lightweight shaft, is utilized: to rotate circular saws for pruning; to rotate discs having multiple, projecting fingers or spikes for top surface tilling in gardens; to rotate circular discs with brushes or sponges for washing windows, vehicles and other structures, supplying cleaning fluids; and to rotate circular discs with sand papers, wire brushes, and/or pads for preparing, smoothing, or polishing surfaces. The electrical motor housing, made of a polycarbonate material into two sealable portions is formed to draw cooling air in from below and to discharge it above, thereby driving away rain, wood chips, and other possible unwanted moisture and/or debris from the pruner and its operator.



3,688,140
LEAKAGE CONTROL MEANS FOR A SUBMERSIBLE MOTOR ASSEMBLY

Edward J. Schaefer, Bluffton, Ind., assignor to Franklin Electric Co., Inc., Bluffton, Ind.

Filed Sept. 18, 1970, Ser. No. 73,442
Int. Cl. H02k 5/10, 5/12
U.S. Cl. 310—87 14 Claims



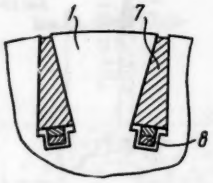
The assembly includes a watertight enclosure which protects critical motor parts, such as the bearings and windings, from the water. The rotatable drive shaft of the motor extends out of the enclosure through an opening for connection with a device to be driven, and means is provided to control leakage of water into the enclosure through the opening around the shaft. The leakage control means comprises a rotating shaft seal between the margin of the opening and the shaft. Above the seal is a sump, and a pump is located within the sump, the pump being driven by rotation of the motor shaft. A liquid, either lubricant or accumulated leakage, contained in the sump is forced by the pump in the direction of the seal, and the pressure in the sump developed by the pump prevents additional leakage through the seal. Further, the pump pressure may force some of the leakage accumulated in the sump out of the enclosure through the seal.

3,688,141

SQUIRREL-CAGE ROTORS FOR INDUCTION MOTORS

Konstantin Nikolaevich Maslennikov, ulitsa Sibiryakov-Gvardeitsev 9, kv. 11; Jury Vasilievich Argunov; Nikolai Porfirievich Savonkin, both of ulitsa Bijukhera, 48, kv. 58; Rudolf Mikhailovich Smyvin, ulitsa Nakodnaya, 7, kv. 14, and Igor Alexeevich Chzhen, prospekt Karlamarxa, 9, kv. 7, all of Novosibirsk, U.S.S.R.

Filed Oct. 15, 1971, Ser. No. 189,592
Int. Cl. H02k 3/06
U.S. Cl. 310—211 3 Claims



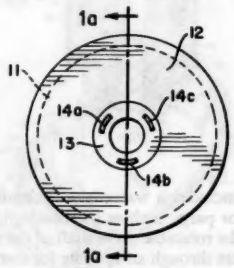
According to the invention, the squirrel cage rotor of an induction motor comprises a core with slots located on the rotor shaft and comprising split stacks alternating along the shaft axis; the internal parts of the split stacks are set on the rotor shaft, and the outer parts have divergent slots and are separated from the internal parts with annular gaps; the said one-piece stacks are located on the rotor shaft and have deep slots containing trapezoid bars fixed in place with counter-opposed wedges; said inverted wedges rest on the bottoms of the slots of the outer parts of said split stacks.

3,688,142

COLLECTOR RING BODIES FOR ELECTRIC MOTORS

Walter Forste, Suhl Thuringin; Hans-Joachim Teuschler, Berlin, and Joachim Schreiber, Berlin, all of Germany, assignors to VVB Elektrische Konsumguter, Berlin, Germany

Filed Dec. 16, 1970, Ser. No. 98,755
Int. Cl. H01r 39/08
U.S. Cl. 310—232 13 Claims



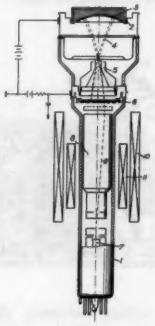
Collector ring bodies for encased high-speed electric motors, having a cylindrical hub of an insulating material, at least two non-metallic collector rings on the hub, and caps or sleeves for securing the rings to the hub, wherein either the hub or the securing elements, or both, are made from a material such as beryllium-oxide containing cements, thermosetting or thermoplastic materials, which provide good heat dissipation as well as electrical insulation.

3,688,143

MULTI-DIODE CAMERA TUBE WITH FIBER-OPTICS FACEPLATE AND CHANNEL MULTIPLIER

Albert Lieb, 7919 Betlinshausen, and Hans-Christian Niehuus, 7911 Ay/Iller, both of Germany, assignors to Licentia Patent-Verwaltungs—GmbH, Frankfurt (main), Germany

Filed Feb. 16, 1970, Ser. No. 11,731
Claims priority, application Germany, Feb. 15, 1969, P 19 07 649.4
Int. Cl. H01j 31/48, 31/28
U.S. Cl. 313—67 1 Claim



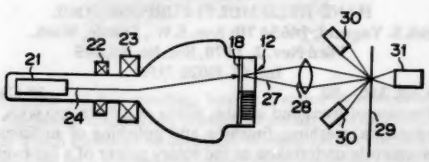
A multi-diode camera tube comprises means for receiving the radiation of the picture to be transmitted and emitting electrons according to the picture to be transmitted, these electrons being accelerated in an electrical field and impinge on a multi-diode plate to cause operation of the diodes in accordance with the picture content. The receiving means may be a photocathode or a secondary emission multi-channel plate depending on the radiation used for the picture.

3,688,144

CATHODE RAY TUBE WITH CONTIGUOUS TRANSPARENT SECTION AND FIBER OPTICS SECTION

Norio Harao, and Motohiro Yano, both of Yokohama, Japan, assignors to Tokyo Shibaura Electric Co., Ltd., Horikawa-cho, Kawasaki-shi, Japan

Filed Oct. 14, 1970, Ser. No. 80,624
Claims priority, application Japan, Oct. 15, 1969, 44/97481; Jan. 17, 1970, 45/4865
Int. Cl. H01j 29/18, 29/30
U.S. Cl. 313—92 LF 5 Claims

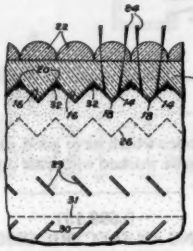


A cathode ray tube including an envelope, and a head or face plate provided on the front side thereof which is comprised of an optical fiber plate and two reinforced glass plates, closely attached to the longitudinal sides of the fiber plate, the inner surface of the fiber plate being coated with a fluorescent layer to be linearly scanned by electron beams.

3,688,145
LIGHT DETECTOR HAVING WEDGE-SHAPED PHOTOCATHODE AND ACCELERATING GRID STRUCTURE

Donald K. Coles, 2505 Capital Ave., Fort Wayne, Ind.

Filed Oct. 8, 1970, Ser. No. 79,102
Int. Cl. H01j 39/02, 39/14, 39/04
U.S. Cl. 313—102 5 Claims

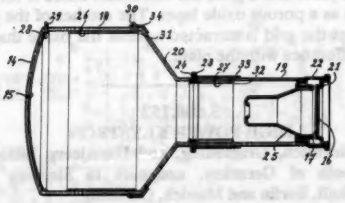


The faceplate of a light detector tube is provided with an internal photocathode having wedge-shaped projections and external lenses to concentrate the light from a source onto the projecting photosensitive surface areas. An accelerating grid having a corresponding configuration is spaced closely to the photocathode to increase the emission of electrons from the photosensitive surface. A potential source establishes an electric field between the photocathode and an anode, with the anode collecting the electrons.

3,688,146
IMAGE AMPLIFIER HAVING EXTERNAL ELECTROSTATIC SHIELD

Albert Bouwers, The Hague, Netherlands, assignor to N.V. Optische Industrie De Oude Delft, Delft, Netherlands

Filed May 23, 1968, Ser. No. 731,442
Claims priority, application Netherlands, June 6, 1967, 6,708,012
Int. Cl. H01j 39/14, 39/18, 29/06
U.S. Cl. 313—102 3 Claims



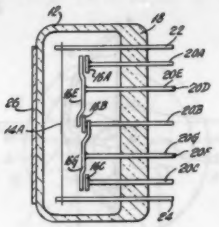
An electron optical image tube with a focus electrode having the form of a thin metallic film on the inner surface of the glass envelope is provided with an external conductive shield which carries electrode potential. The shield is in radial registry with the electrode edge, but extends a short distance beyond the edge to relieve the same from local high potential gradients.

3,688,147
FLUORESCENT SYMBOL DISPLAY TUBE HAVING PLURAL CATHODES AND/OR VACUUM ANODE INSULATION

Rein Raado, Morristown, N.J., assignor to Wagner Electric Corporation

Continuation-in-part of Ser. No. 751,168, Aug. 8, 1968, abandoned. This application Aug. 24, 1970, Ser. No. 66,403
Int. Cl. H01j 1/88, 63/00
U.S. Cl. 313—108 R 12 Claims

An evacuated glass envelope contains a plurality of selectively energizable phosphor-coated elements (anodes) for presenting a symbol display. One or more thermionic cathodes are situated between the display elements and the display surface of the envelope to provide a direct electron beam to the phosphor-coated surfaces. The dull red glow of the thermionic cathodes is masked by the symbol display itself and, optionally, by a filter covering the display surface of the envelope.

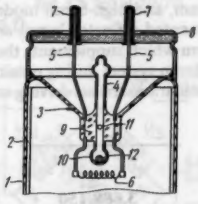


Variations in intensity at the end portions of the display elements are prevented by eliminating insulating members which would accumulate a charge tending to repel the electron beam. Optionally, the end portions of the display elements may be extended and curved to overlap one another and thus provide a symbol display formed by an unbroken luminous field.

3,688,148
AMALGAM HOUSING MEANS FOR A FLUORESCENT LAMP

Anatoly Stepanovich Fedorenko, ulitsa Svetotekhniki, 19, kv. 53; Jury Alexeevich Mescheryakov, ulitsa A. Nevskogo, 127, kv. 24; Alexandr Alexandrovich Prytkov, ulitsa Svetotekhniki, 57, kv. 43, all of Saransk Massr, and Vladimir Vasilievich Tyabirdin, ulitsa Zygina, 42, kv. 45, Poltava, all of U.S.S.R.

Filed Nov. 17, 1970, Ser. No. 90,270
Int. Cl. H01j 61/28
U.S. Cl. 313—109 3 Claims



The invention relates to fluorescent lamps with an amalgam.

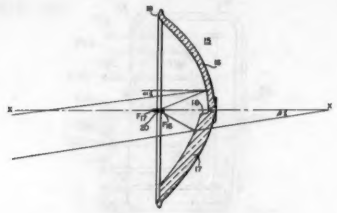
The disclosed fluorescent lamp with an amalgam comprises within its internal space means for housing the amalgam thereinside, one end portion of said means being positioned in the high-temperature zone of the lamp, adjacent to the cathode thereof, the opposite end portion of said means being positioned in the low-temperature zone of said lamp, adjacent to the base thereof.

Said means can be adapted either for free displacement of the amalgam thereinside, when the lamp is to be mounted into a light fixture, or for retaining said amalgam in a fixed desired position thereinside.

3,688,149
VEHICLE HEADLAMP HAVING A DUAL-SEGMENT REFLECTOR

Elam Pitkjaan, Cedar Grove, N.J., assignor to Westinghouse Electric Corporation, Pittsburgh, Pa.

Filed Oct. 1, 1970, Ser. No. 77,092
Int. Cl. H01j *5/16*
U.S. Cl. 313—114 18 Claims



A vehicle headlamp having a single concentrated light source and a unitary concave reflector which is contoured to provide a pair of hemiparabolic reflector segments that have axially spaced focal points and merge with one another along a protruding step that extends horizontally along the inner surface of the reflector. The light source extends between and is so oriented relative to the focal points of the reflector segments that the light beams from the segments are superimposed and thus form a single composite beam of intense light that has a sharp horizontal cut-off. A shield mounted in front of the light source intercepts direct rays from the source and prevents glare. The lamp is preferably of "sealed beam" construction and contains a C6 or C8 type filament. Axially or transversely mounted halogen-incandescent lamps can also be employed as light sources. The lens component of the lamp is preferably provided with vertically extending flutes to provide additional control of the beam pattern or, alternatively, can be made of clear glass. In the case of a PAR 36 type lamp having a C8 filament or an axially mounted halogen-incandescent lamp, a domed lens is used to accommodate the shield and mount structure.

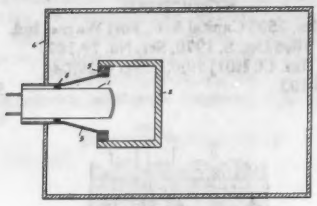
Also disclosed are vehicular roadway-lighting systems wherein one of the aforesaid segmented reflector headlamps is combined with three conventional headlamps to provide low-beam, turnpike-beam, and high-beam modes of illumination—or a pair of segmented-reflector lamps are used as an auxiliary lighting system which supplements the illumination of a conventional headlamp system during passing or when driving in a fog or under similar hazardous driving conditions.

3,688,150
DEGASSING ARRANGEMENT FOR ELECTRON BEAM TUBE INCLUDING AN MK DISPENSER CATHODE

Manfred Wintzer, Munich, Germany, assignor to Siemens Aktiengesellschaft, Berlin and Munich, Germany

Filed Sept. 27, 1968, Ser. No. 763,412
Claims priority, application Germany, Oct. 4, 1967, S 112258
Int. Cl. H01j *19/06, 61/26*
U.S. Cl. 313—178 5 Claims

Method and apparatus for producing electrodes capable of receiving considerable cathode bombardment and which are formed so as to remove gas from an electron tube, are disclosed. The electrodes are formed by powdered metallurgy by mixing getter material powders such as zirconium, titanium or other getter material powders with carbon powder such as graphite and then forming the electrodes by pressing the mixture into a mold with a small amount of pressure and sintering in the range, for example, of 800° to 1,400° centigrade to

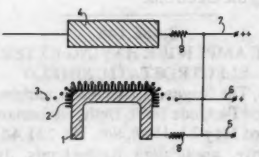


produce the electrodes which have good gas absorption capability and which can be worked with little difficulty.

3,688,151
DEVICE HAVING AN ELECTRIC DISCHARGE TUBE COMPRISING A FIELD EMISSION CATHODE, AND DISCHARGE TUBE DESTINED FOR SUCH A DEVICE

Constant Gijsbertus Johannes Jansen; Klaas Compaan, and Albertus Venema, all of Emmasingel, Eindhoven, Netherlands, assignors to U.S. Philips Corporation, New York, N.Y.

Filed Sept. 14, 1970, Ser. No. 71,806
Claims priority, application Netherlands, Sept. 18, 1969, 6914205
Int. Cl. H01j *1/46, 1/52, 17/04*
U.S. Cl. 313—348 4 Claims

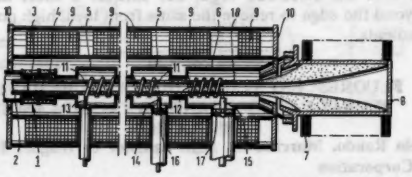


In a cold cathode consisting of a layer of aluminum oxide between a plate and a grid, the aluminum oxide is formed on aluminum as a porous oxide layer. The meshes of the grid are so fine that the grid is attracted against the oxide due to the voltage difference with the plate.

3,688,152
HIGH POWER KLYSTRON

Hinrich Heynisch, Graefelfing, and Hannjoerg Bittorf, Munich, both of Germany, assignors to Siemens Aktiengesellschaft, Berlin and Munich, Germany

Filed March 3, 1971, Ser. No. 120,394
Claims priority, application Germany, March 5, 1970, P 20 10 480.7
Int. Cl. H01j *25/14*
U.S. Cl. 315—5.31 1 Claim

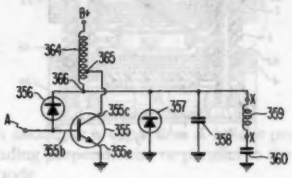


A high power klystron including means for forming an electron beam, preferably a hollow electron beam, with a perveance which is greater than 3 and means for defining interaction paths including delay line type structures in resonator chambers as sections with extended interaction.

3,688,153
DEFLECTION CIRCUIT

Carl Franklin Wheatley, Jr., Somerset, N.J., assignor to RCA Corporation

Filed April 2, 1970, Ser. No. 25,100
Int. Cl. H01j 29/76
U.S. Cl. 315—27 TD 3 Claims

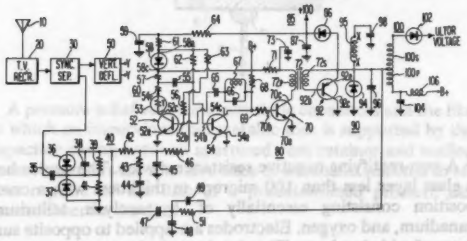


A unidirectional conductive device is coupled from a base terminal to a collector terminal of a horizontal deflection output transistor in a television receiver and poled in a direction to prevent the transistor from saturating when it is driven into its conductive state during a portion of each deflection cycle. Biasing means is coupled to the diode to preselect the desired operating voltage of the transistor during its conduction period.

3,688,154
ASTABLE MULTIVIBRATOR CIRCUIT WITH MEANS FOR ENSURING PROPER STARTING OF OSCILLATIONS

Todd J. Christopher, Indianapolis, Ind., assignor to RCA Corporation

Filed May 11, 1970, Ser. No. 36,058
Int. Cl. H03k 3/282; H01j 29/70
U.S. Cl. 315—27 TD 14 Claims

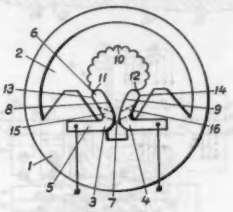


In an astable multivibrator circuit, a diode operates in conjunction with a voltage supply derived from the multivibrator output signal to insure the initiation of oscillations by limiting base drive current to the multivibrator transistors when power is first applied. This prevents saturation of both transistors and ensures sufficient loop gain to initiate oscillations in response to an unbalance in the system. As power is first applied, the diode is non-conductive and a relatively low voltage is applied to bias the multivibrator transistors. During normal operation, the voltage derived from the multivibrator output signal causes the diode to conduct, thereby coupling the base circuits to the operating potential supply. While conductive, the diode forward voltage drop compensates for changes in the V_{be} of the transistors due to temperature variations and tends to maintain a constant charging current for the base circuits.

3,688,155
REIGNITING SPARK GAP DEVICE INCLUDING A FLOW-THROUGH CHANNEL

Bengt Johansson, and Erland Nilsson, both of Ludvika, Sweden, assignors to Allmanna Svenska Elektriska Aktiebolaget, Vasteras, Sweden

Continuation-in-part of Ser. No. 9,706, Feb. 9, 1970, abandoned. This application June 17, 1971, Ser. No. 154,049
Claims priority, application Sweden, Feb. 21, 1969, 2398/69
Int. Cl. H01j 7/44; H02h 9/06
U.S. Cl. 315—36 8 Claims

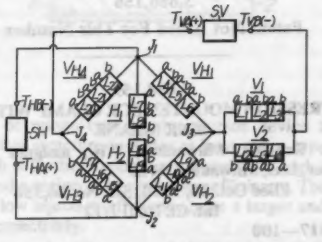


A reigniting spark gap for surge diverters with magnetic blowing has electrodes arranged on an insulating base. Each electrode has a spark gap part arranged in an extinguishing chamber and the spark gap parts of the electrodes diverge from an ignition point and the surfaces of the spark gap parts face each other and form running-out paths for the foot points of the arc arising between the electrodes. At least one of the two surfaces of the spark gap parts facing away from each other forms a return path for one foot point of an arc. The return path has an end point substantially opposite the ignition point. A channel connects the running-out path and the return path and forms a through-flow channel for ionized gas from the return path to the running-out path.

3,688,156
ELECTRON BEAM DEFLECTION SYSTEM UTILIZING A YOKE HAVING A PLURALITY OF SEPARATE WINDINGS TOROIDALLY WOUND THERON

Kimitake Utsunomiya, Tokyo, and Hitoshi Yasuda, Saitama, both of Japan, assignors to Sony Corporation, Tokyo, Japan

Filed March 17, 1970, Ser. No. 20,196
Claims priority, application Japan, March 17, 1969, 44/20661
Int. Cl. H01j 29/70
U.S. Cl. 315—276 D 8 Claims



In a color television receiver having a color cathode ray tube and an electron beam deflection yoke receiving the neck portion of the tube for deflection the electron beams in the tube to scan its color phosphor screen, the yoke has a plurality of separate windings toroidally wound in a generally axial direction and in a predetermined spaced relation about the periphery of an annular magnetic core, and the individual windings are interconnected to form three groups of windings, two of which are respectively connected to a horizontal deflection current source and to a vertical deflection current

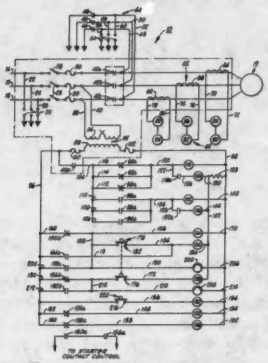
source and the third of which is connected to both the horizontal and vertical deflection current sources whereby the windings establish horizontal and vertical magnetic fields within the yoke and the cathode ray tube for accurate scanning of the screen by the electron beams.

3,688,157

MOTOR PROTECTION CONTROL APPARATUS

Joseph F. Spears, 4606 Pasadena, Midland, Tex.

Filed Dec. 28, 1970, Ser. No. 101,726
Int. Cl. H02h 7/085
U.S. Cl. 317—13 R **18 Claims**



An electric motor protection control apparatus adapted to protect an electric motor being supplied operating power via power conductors, having surge voltage protection apparatus which is connected to the power conductors, generally between the motor starter contacts and the motor, the surge voltage protection apparatus being adapted and disposed to provide continuous surge voltage protection in an opened or a closed position of the motor starter contacts; and having a current sensing apparatus connected to each power conductor, each current sensing apparatus being adapted to sense the current in one of the power conductors, and to controllingly stop the motor when the current in any one of the power conductors reaches a preset high or a preset low current level

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3,688,158

Patent Not Issued For This Number

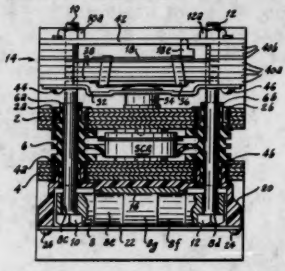
3,688,159

COMPRESSION MOUNTED SCR CLAMP WITH HEAT SINK MEANS

Clyde F. Robbins, Milwaukee, Wis., assignor to Cutler-Hammer, Inc., Milwaukee, Wis.

Filed Oct. 28, 1970, Ser. No. 84,556
Int. Cl. H01l 1/12
U.S. Cl. 317—100 **11 Claims**

A mounting clamp including heat sinks for a compression mounted type power semiconductor device such as an SCR, rectifier diode, or the like. Diamond shaped, tapered springs distribute the stresses equally throughout their lengths to afford greater deflection that reduces tolerances and facilitates staying within the allowable pressure range. A unitary spring subassembly also holds the pressure bearing and the load indicator. The construction is such that if the various parts become tilted on the pressure points, the line of force will still be through the center of the silicon disc inside the SCR. A pressure plate provides an enlarged base to afford low unit pressure on the insulation. Insulated parts afford the required electrical clearances. A dust-tight insulating cover or "boot"



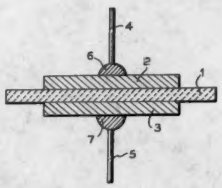
performs sealing, positioning and insulating functions during use and may also serve as a cushioned packing during shipment.

3,688,160

THIN FILM NON-RECTIFYING NEGATIVE RESISTANCE DEVICE

Masahiro Nagasawa, and Hiroyuki Watanabe, both of Hirakata, Japan, assignors to Matsushita Electric Industrial Co., Ltd., Kadoma, Osaka, Japan

Filed March 25, 1971, Ser. No. 128,099
Int. Cl. H01g 3/00
U.S. Cl. 317—238 **8 Claims**



A non-rectifying negative resistance device. The device has a glass layer less than 100 microns in thickness with a composition consisting essentially of, by analysis, tellurium, vanadium, and oxygen. Electrodes are applied to opposite surfaces of said glass layer. The glass layer is electrically activated by applying thereto an electric field of more than 5×10^4 volt/cm through said electrodes. Such a device has a non-rectifying current-voltage characteristic which includes negative resistance regions, and it responds very rapidly to an applied electrical signal.

3,688,161

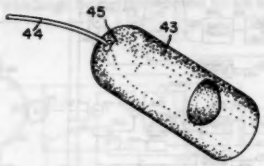
ANODES FOR SOLID ELECTROLYTIC CAPACITORS

Gerhart P. Klein, Manchester, Mass., and Ivan L. Wingood, Jr., Bedford, Mass., assignors to P. R. Mallory & Co., Inc., Indianapolis, Ind.

Filed April 23, 1971, Ser. No. 136,772
Int. Cl. H01g 9/05, 13/00
U.S. Cl. 317—230 **17 Claims**

Porous anodes suitable for use in capacitors are prepared by forming moistened metal powder into a mass, freezing the

moistened mass thereby bonding the metal powder together and sintering the mass to convert it to a porous pellet suitable



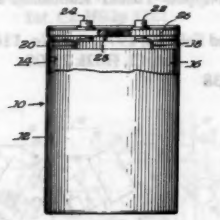
for use as an anode for a capacitor. A hole is provided in the anode, extending perpendicular or parallel to the longitudinal axis of the anode.

3,688,162

SEALED CASING FOR ELECTROLYTIC CAPACITOR WITH PRESSURE RELIEF VENT

John Robert Willy, Easley, and Emil F. Blase, Pickens, both of S.C., assignors to Sangamo Electric Company, Springfield, Ill.

Filed June 14, 1971, Ser. No. 152,820
Int. Cl. H01g 9/12
U.S. Cl. 317—230 **11 Claims**



A pressure relief vent for electrolytic capacitors and the like in which an impervious thin metallic disc is supported by the capacitor casing between apertured vent retainer and sealing gasket members the aperture sizes of which are selected to effect rupture of the disc at a predetermined pressure differential across the disc.

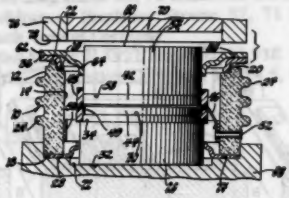
3,688,163

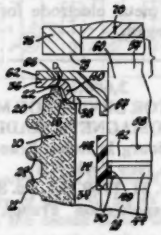
COLD WELDED SEMICONDUCTOR PACKAGE HAVING INTEGRAL COLD WELDING OIL

Dale L. Daniels, Kokomo, and Thomas J. Furnival, Logansport, both of Ind., assignors to General Motors Corporation, Detroit, Mich.

Filed Aug. 4, 1970, Ser. No. 60,865
Int. Cl. H01l 3/00, 5/00
U.S. Cl. 317—234 R **3 Claims**

A hermetically sealed enclosure for a semiconductor device and method for making same which includes providing a tubular ceramic housing with a circumferential integral cold welding die on one end face thereof. A cold weldable layer is bonded to the one end face of the housing, with a portion of the layer overlying the die. A first cover member is cold welded to the layer over the die to provide a hermetic seal at the die end and a first electrical and thermal contact. A second cover member hermetically encloses the end opposite





the integral die and provides an electrical and thermal contact at the opposite end of the housing.

3,688,164

MULTI-LAYER-TYPE SWITCH DEVICE

Kiyoshi Tsukuda; Tatsya Kamei, and Takuzo Ogawa, all of Hitachi, Japan, assignors to Hitachi, Ltd., Tokyo, Japan

Filed Sept. 25, 1970, Ser. No. 75,413
Claims priority, application Japan, Oct. 1, 1969, 44/77760
Int. Cl. H01l 9/12
U.S. Cl. 317—235 **13 Claims**

A pnpn- or npnpn-type semiconductor device having a shorted emitter structure includes at least one n-type emitter region which is further divided into a region of high injection efficiency and a region of low injection efficiency. The regions of high and low injection efficiency have a larger and smaller thickness, respectively.

3,688,165

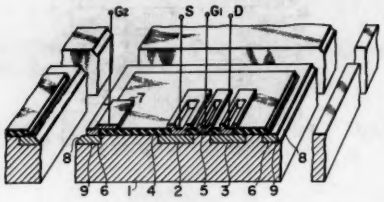
FIELD EFFECT SEMICONDUCTOR DEVICES

Yoshio Tominaga; Hiroto Kawagoe, and Yuichi Teranishi, all of Tokyo, Japan, assignors to Hitachi, Ltd., Tokyo, Japan

Filed Aug. 26, 1970, Ser. No. 67,141
Claims priority, application Japan, Aug. 27, 1969, 44/67192
Int. Cl. H01l 11/14
U.S. Cl. 317—235 R **16 Claims**

A semiconductor device in which, for example, an insulated gate type field effect transistor is formed in a major surface of

an N-type silicon substrate having an edge that is formed by mechanical separation; a P-type region is formed in a portion



of the edge area of the substrate or in the entire edge area of the substrate, and a metal electrode for grounding is connected to the P-type region.

3,688,166

SEMICONDUCTOR DEVICE FOR MODULATING ELECTROMAGNETIC RADIATION

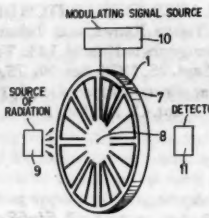
Francois Desvignes, Bourg la Reine, France, assignor to U.S. Philips Corporation, New York, N.Y.

Filed Nov. 21, 1969, Ser. No. 878,744

Claims priority, application France, Nov. 27, 1968, 68,175529

Int. Cl. H01l *15/02*

U.S. Cl. 317—235 R **15 Claims**



A multiple semiconductor modulator for electromagnetic radiation, particularly suitable as an attitude sensor in artificial satellites consisting of a preferably circular semiconductor plate which is divided into sectors by contacts provided on oppositely located major surfaces of the plate. Each sector which is provided with an injecting contact on the one major surface and with a non-injecting contact on the opposite major surface forms an independent modulator.

3,688,167

SLAVE CURRENT CONTROL SYSTEM FOR A PLURALITY OF ELECTRIC MOTORS COUPLED TO A COMMON LOAD

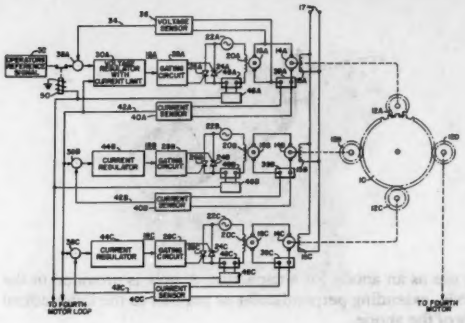
Curtis L. Ivey; Alvin M. Vance, both of Williamsville, and Hermann Eisele, Penn Hills, all of Pa., assignors to Westinghouse Electric Corporation, Pittsburgh, Pa.

Filed Nov. 19, 1970, Ser. No. 90,965

Int. Cl. H02p *7/68*

U.S. Cl. 318—45 **4 Claims**

This disclosure relates to a motor control system for a plurality of direct current motors coupled through gearing or the like to a common load, so that all motors must rotate at the same speed. The torques exerted by all the motors are equalized by utilizing a current feedback signal as a control parameter derived from one master motor for regulating the currents through, and hence the torques exerted by, the other motors (identified as slave motors). The system additionally provides



for deenergizing all motors whenever an overcurrent condition occurs, or when there is a shaft of pinion failure in any motor loop.

3,688,168

Patent Not Issued For This Number

3,688,169

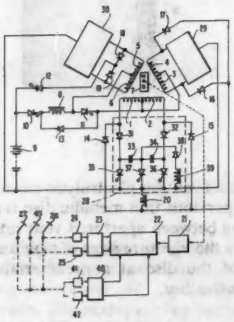
BRUSHLESS MOTOR CONTROL APPARATUS FOR AN ELECTRIC VEHICLE

Taiji Yamaya, and Minoru Okada, both of Kyoto, Japan, assignors to Nippon Yusoki Kabushiki Kaisha, Kyoto-fu, Japan

Filed Feb. 18, 1971, Ser. No. 116,359

Int. Cl. H02k *29/00*

U.S. Cl. 318—138 **6 Claims**



Disclosed is a motor control circuit for use with a brushless motor which drives electric vehicles. The invention includes three, two phase chopper circuits which, during high rotation speed, operate as square wave inverter circuits.

3,688,170

REVERSING MOTOR SYSTEM FOR A LAUNDRY APPLIANCE

Joseph Karklys, St. Joseph, and Stephen A. Becker, Benton Harbor, Mich., assignors to Whirlpool Corporation, Benton Harbor, Mich.

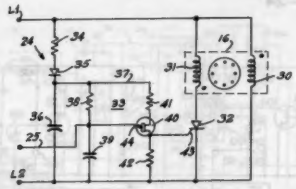
Filed April 16, 1971, Ser. No. 134,580

Int. Cl. H02p *1/42*

U.S. Cl. 318—207 A **18 Claims**

The motor of a laundry appliance is selectively driven in either a unidirectional or an alternating rotary manner by a

single phase induction motor to rotate a clothes basket during a fluid extraction operation and to oscillate an agitation device during a laundry agitation period. The motor is provided with a pair of stator windings connected in opposite polarity sense, one of these windings being connected to an alternating voltage source for continuously receiving an alternating voltage wave while the other winding is selectively and/or cyclically connected across the voltage input terminals for a very brief period to reverse the motor. The motor with an electronic control circuit forms the basis of a simplified drive system for an automatic laundry appliance.



3,688,171

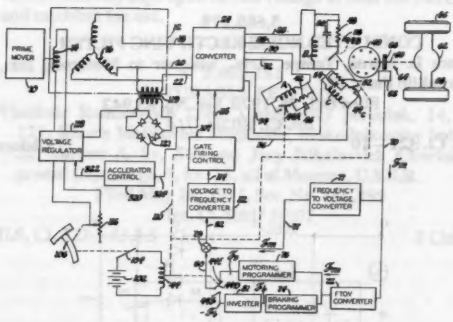
INDUCTION MOTOR BRAKING SYSTEM

Jalal T. Salihi, Birmingham; John J. Brockman, Southfield, and George J. Spix, Clawson, all of Mich., assignors to General Motors Corporation, Detroit, Mich.

Filed Aug. 13, 1971, Ser. No. 171,464

Int. Cl. H02p 3/22

U.S. Cl. 318—211 **10 Claims**



A braking system for a polyphase induction motor fed from a source of alternating current through a controlled rectifier converter having a variable output frequency. A control system is provided which is capable of controlling the output frequency of the converter relative to the rotor speed of the motor such that the motor can be operated with either a positive or a negative slip frequency. When it is desired to brake the motor it is operated at a negative slip frequency and braking resistors are connected across the phase windings of the motor. In addition the negative slip frequency is varied during the braking mode of operation as a function of induction motor rotor speed. The system is capable of reducing the conduction angle of the controlled rectifier converter during braking and is capable of connecting in different valued braking resistors for different speed ranges of the motor. The braking system is disclosed herein for use with a vehicle propelled by an induction motor and more particularly an induction motor powered off-highway earthmover.

3,688,172

COMMUTATING DEVICE FOR BRUSHLESS MOTOR INCLUDING MAGNETIC DIODES

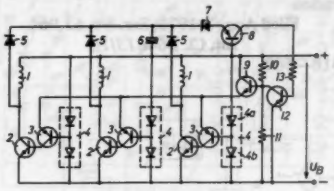
Paul Sieber, Lortzingstrasse 20, 71 Heilbronn-Bockingen, and Joachim Kuhlmann, Breslauer Strasse 57, 71 Neilbroon-Neckargartach, both of Germany

Filed March 4, 1971, Ser. No. 120,918

Claims priority, application Germany, March 5, 1970, P 20 10 385.9

Int. Cl. H02h 29/00

U.S. Cl. 318—254 **6 Claims**



A commutating device for a brushless direct current motor comprises a plurality of pairs of series connected magnetic diodes separated in the motor stator and acting as voltage dividers for the motor operating voltage, the voltage division being variable by a variation of the resistances of the diodes of a pair oppositely under the influence of a magnetic field, and a plurality of controllable switching units, each having an input electrode connected to the common junction of the series connection of one pair of diodes so as to control the switching units to connect the associated field winding to the operating voltage in synchronism with the rotation of the motor.

3,688,173

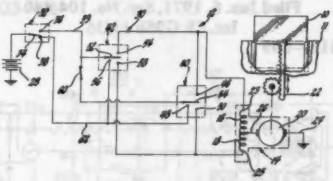
SOLID STATE WINDOW CONTROLS

Richard P. Ballou, Howell, Mich., assignor to Physical Electronics Indusries, Inc., Edina, Minn.

Filed Aug. 27, 1971, Ser. No. 175,571

Int. Cl. H02p 1/22

U.S. Cl. 318—267 **5 Claims**



Power window apparatus operated by manipulation of either window or auxiliary switches for precluding closure of vehicle windows unless the vehicle ignition switch is in an "on" setting and for permitting opening of the vehicle windows regardless of the ignition switch setting. A reversible electric motor having first and second selectively energizable windings drivingly connected to a window effective to close and open the window in response to energization of the respective windings by a power source. In a first embodiment the ignition switch and each winding is series connected with window and auxiliary switches to achieve the aforementioned feature. In a second embodiment the biasing of transistors in

series with each of the windings is controlled by the ignition, window, and auxiliary switches to achieve the aforementioned feature.

3,688,174

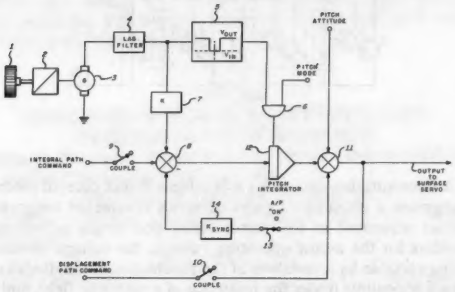
Patent Not Issued For This Number

3,688,175

AUTOPILOT PITCH ATTITUDE CONTROL

Paul A. Rauschelbach, Phoenix, Ariz., assignor to Sperry Rand Corporation

Filed Aug. 7, 1970, Ser. No. 61,964
Int. Cl. B64c *13/16*
U.S. Cl. 318—580 **10 Claims**



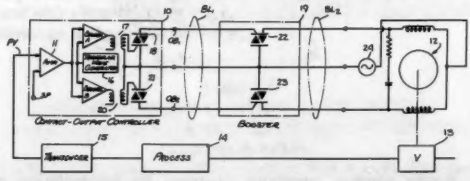
A manually operated pitch wheel, not requiring any centering, synchronizing, or detents, is used to adjust the pitch attitude of an aircraft, which is flying under control of the pitch attitude mode of an automatic flight control system. This pitch wheel may also be used to adjust the aircraft vertical speed while it is flying in the vertical speed mode of an automatic flight control system.

3,688,176

ELECTRONIC PROCESS CONTROLLER INCLUDING CURRENT BOOSTER TO OPERATE HEAVY-DUTY MOTORIZED VALVE

Hubert A. Riester, Huntingdon Valley, and Jun Futamura, Hatboro, both of Pa., assignors to Fischer & Porter Company, Warminster, Pa.

Filed Jan. 6, 1971, Ser. No. 104,440
Int. Cl. G05b *11/36*
U.S. Cl. 318—609 **9 Claims**



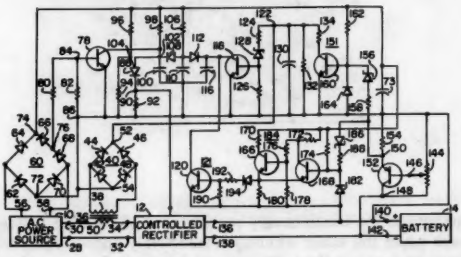
A process-control system which includes a contact-output electronic controller adapted to compare a process variable signal (PV) with a set point signal (SP) to produce a first on-off output signal when PV is below SP and a second on-off output signal when PV is above SP. The controller output signals are delivered to a booster provided with a pair of heavy-duty triac control circuits coupled to a reversible motor which drives a final control element, the output signals driving the triacs to cause the motor to turn in a direction and to an extent causing the final control element to vary the process variable to bring it into line with the set point.

3,688,177

BATTERY CHARGER

John B. Reeves, Trafford, and Gary O. Hitchins, Irwin, both of Pa., assignors to Westinghouse Electric Corporation, Pittsburgh, Pa.

Filed March 25, 1971, Ser. No. 127,875
Int. Cl. H02j *7/02*
U.S. Cl. 320—24 **7 Claims**



Battery charging apparatus providing different charging rates dependent upon the state of charge of the battery. The battery charging current and battery terminal voltage are sampled and applied to a control circuit. The control circuit changes the conduction duration of a controllable rectifier to change the battery charging current. The control circuit is adaptable to multiple-phase battery charging apparatus.

3,688,178

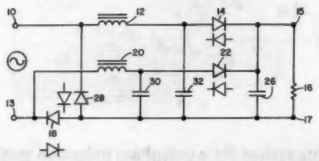
Patent Not Issued For This Number

3,688,179

CONDUCTED NOISE RECTIFYING FILTER

Clence L. Burns, Tempe, Ariz., assignor to Motorola, Inc., Franklin Park, Ill.

Filed Oct. 26, 1970, Ser. No. 83,942
Int. Cl. H02m *1/14*
U.S. Cl. 321—10 **7 Claims**



A rectifying filter is disclosed in which the amplitude of the conducted line noise generated by the rectifying process is lower and in which the rectifier current has fewer harmonic components than known such filters and in which furthermore, the operation of the disclosed filter is not decreased in quality due to changes in the loading of the filter as greatly as in known filters. This is accomplished at least in part by inserting filter elements into the rectifying bridge comprising a part of the rectifying filter.

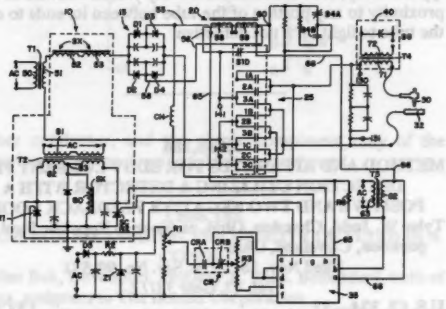
ERRATUM

For Class 321—45 see:
Patent No. 3,688,182

3,688,180
WELDING APPARATUS

Wilburt A. Chiasson; Ralph E. Barhorst, and Bryce A. Muter, all of Troy, Ohio, assignors to Hobart Brothers Company, Troy, Ohio

Filed Jan. 14, 1971, Ser. No. 106,411
Int. Cl. H02m 7/00
U.S. Cl. 321—21 3 Claims

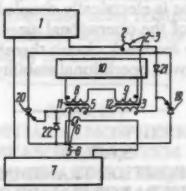


An improved welding power supply includes saturable reactor means in its output to control welding current. A pulse generator is used to control the firing of SCRs which in turn control the average current in the control winding of the reactor and thus the welding current. A unique current sensing circuit provides a feedback voltage to the pulse generator and monitors alternating current, direct current and direct current-reverse polarity welding current without mechanical switching means. The pulse generator is provided with a secondary control circuit which may be used for a limited time to provide higher initial currents to aid in the establishment of the arc. A secondary power supply is also provided which may be connected in parallel with the main power supply to provide a relatively high open circuit voltage to heat the electrode and establish the arc.

3,688,181
SATURABLE REACTOR

Vladimir Romanovich Leep, Chapaevsky pereulok, 14, kv. 121; Kharis Malikovich Sibgatulin, Beskudnikovsky bulvar, 32, korpus 4, kv. 56, and Jury Nikolaevich Cherkasov, proezd Cherskogo, 9, kv. 35, all of Moscow, U.S.S.R.

Filed May 26, 1971, Ser. No. 146,999
Int. Cl. H01f 29/02
U.S. Cl. 323—43.5 S 2 Claims



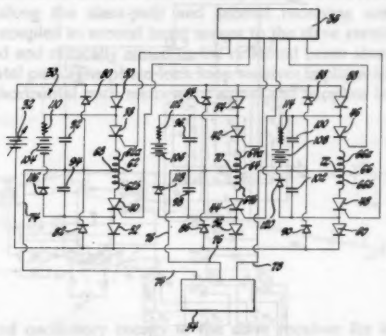
The present invention relates to means for the stabilization of load current, and more specifically to saturable reactors.

According to the invention, an unbiased saturable reactor is characterized in that its a.c. (gate) windings are connected in series with the load circuit which also contains a tap-changer which reduces the number of turns in the a.c. (gate) windings as the reactor changes from an excitation interval to a conduction interval and restores the original number of turns in these windings in the case of a reverse change.

3,688,182
COMMUTING REACTOR FOR A THREE-PHASE INVERTER

Lauren L. Johnson, Westchester, Ill., assignor to General Motors Corporation, Detroit, Mich.

Filed Nov. 9, 1970, Ser. No. 88,067
Int. Cl. H02m 7/48
U.S. Cl. 321—45 C 1 Claim

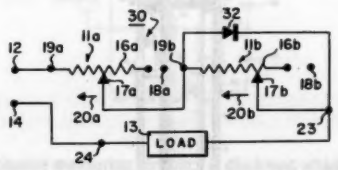


A commuting reactor arrangement is combined with six controlled rectifiers to provide a three-phase inverter. In this inverter, the controlled rectifiers conduct in groups of three, each controlled rectifier being conductive 180° and nonconductive 180° of each cycle of 360 electrical degrees. The commuting reactors are used in combination with commuting capacitors to commute the controlled rectifiers at the conclusion of their respective conductive intervals. The commuting reactor arrangement of this invention utilizes a reactor core provided with three integral core legs, each carrying a center-tapped commuting reactor winding. In this arrangement, flux emanating from any reactor winding circulates in all three legs of the reactor core, thus reducing flux density in the core legs and providing magnetic reset of the core material after each commutation.

3,688,183
HYBRID POWER REGULATOR COMPRISING RHEOSTAT AND DIODE

Arthur N. Schmitt, 6410 Redding, Houston, Tex., assignor to Michael P. Breston, Houston, Tex., a part interest

Filed Oct. 12, 1971, Ser. No. 188,321
Int. Cl. H02m 5/06
U.S. Cl. 323—80 3 Claims



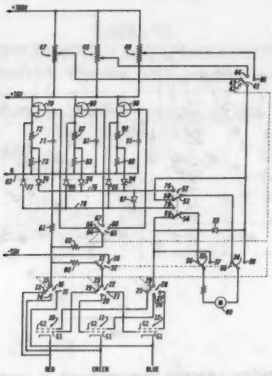
An AC power regulator is provided which employs both resistance and phase regulation. Between zero and half power, resistance regulation is employed in series with a unidirectional conducting device such as a diode. Between half power and full power, resistance regulation is employed in parallel with the diode which acts as a phase regulator. Accordingly, heat is generated in the rheostat only during one-half cycle of the load current. The maximum heat to be dissipated by the regulator is then equal to half the maximum heat to be dissipated by a regulator without phase regulation or diode.

3,688,184

AUTOMATIC COLOR CRT TRACKING TESTER AND METHOD OF TESTING

Robert E. Baum, Dell Rapids, S. Dak., assignor to Sencore, Inc., Sioux Falls, S. Dak.

Filed June 1, 1971, Ser. No. 148,628
Int. Cl. G01r *31/22*; H04n *9/20*
U.S. Cl. 324—20 CR 9 Claims



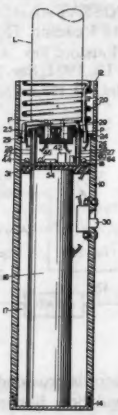
Tracking of the three guns of a color cathode ray tube is tested to determine if the tracking is within allowable limits by a circuit which stores voltages proportional to the emission currents of the guns under standard operating conditions and compares such voltages to provide an indication if such voltages differ from one another by more than a predetermined amount.

3,688,185

INSTRUMENT FOR TESTING OPERABILITY OF FLUORESCENT LAMPS

Verdie A. Masengil, 1500 McClay Drive, Eugene, Oreg.

Filed Oct. 22, 1970, Ser. No. 83,087
Int. Cl. G01r *31/22*
U.S. Cl. 324—22 3 Claims



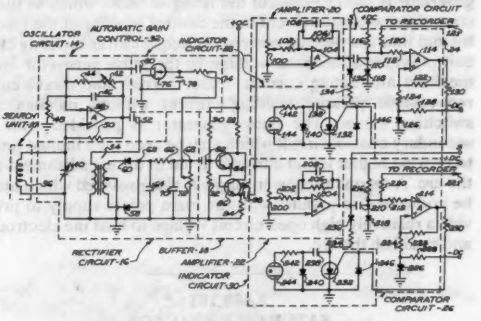
An instrument for testing fluorescent lamps including a tubular housing in which is incorporated a high frequency oscillator circuit and a tank coil in said circuit producing an inductive effect to cause a fluorescent lamp to light up when in close proximity thereto. The instrument is capable of testing two types of fluorescent lamps commonly in use, one type utilizing cathodes in the form of coated wire filaments which must be continuously heated by an electric current passing through them from auxiliary energizing equipment. The instrument includes a socket for plug-in attachment of such lamps, a portion of the tank coil surrounding an end of the tube when it is plugged in for causing the lamp to light if not defective. The other type of fluorescent lamp in common use is a single pin lamp which does not depend on cathodes heated from an external source for its proper operation. While testing the latter type of lamp, the instrument is merely placed endwise in close proximity to any portion of the tube between its ends to cause the tube to light up if not defective.

3,688,186

METHOD AND APPARATUS FOR EDDY CURRENT FLAW DETECTION UTILIZING A DETECTOR WITH A POSITIVE AND TWO NEGATIVE FEEDBACK LOOPS

Tyler W. Judd, Chardon, Ohio, assignor to Republic Steel Corporation, Cleveland, Ohio

Filed Nov. 18, 1970, Ser. No. 90,571
Int. Cl. G01r *33/12*
U.S. Cl. 324—37 13 Claims



An eddy current flaw detector, and method of operation thereof, for detecting defects in metallic workpieces. The flaw detector includes an oscillator circuit having an operational amplifier, a negative feedback circuit coupled between the output terminal and an inverting input terminal of the amplifier, and a positive feedback circuit coupled between the output terminal and a non-inverting input terminal of the amplifier. Also, a search probe is electrically coupled to the non-inverting input terminal of the operational amplifier to form a portion of the positive feedback circuit thereby providing a flaw detector with improved operational stability.

3,688,187

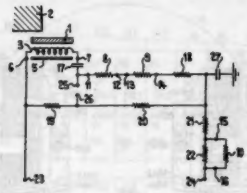
EDDY CURRENT POSITION TRANSDUCER UTILIZING A COIL WHOSE IMPEDANCE IS MADE SUBSTANTIALLY OHMIC

Horst Rudolf Loos, Villars-sur-Glane, Switzerland, assignor to Vibro-Meter A.G., Freiburg, Switzerland

Filed June 5, 1970, Ser. No. 43,848
Claims priority, application Switzerland, June 6, 1969, 8632/69
Int. Cl. G01r *33/00*
U.S. Cl. 324—40 18 Claims

A measuring transducer having a measuring coil of which the impedance is variable by eddy currents induced in a conductor variably coupled with the measuring coil, the im-

pedance of the measuring coil being rendered practically ohmic by close and unvariable coupling of the same with



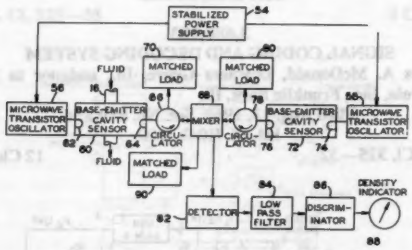
another conductor, and the ohmic component only of the measuring coil being considered for measurement.

3,688,188

MEANS FOR MEASURING THE DENSITY OF FLUID IN A CONDUIT

Aloysius Bak, Davenport, and Roy E. Resh, Bettendorf, both of Iowa, assignors to The Bendix Corporation

Filed Dec. 21, 1970, Ser. No. 99,815
Int. Cl. G01r 27/04
U.S. Cl. 324—58.5 C **9 Claims**



A system using a resonant cavity sensor for determining density of a fluid within a conduit. The system includes a resonant cavity encircling a low loss portion of the conduit through which the fluid may flow. The cavity of the sensor is resonated by a source of microwave power. As the resonant frequency of the sensor is changed due to changing densities of the fluid, the frequency of the source is also changed to maintain a resonant condition. A reference generator output of a predetermined frequency is mixed with a signal of the same frequency as the resonant frequency of the cavity. The output of the mixer is a difference harmonic between the resonant frequency and the predetermined reference frequency with the difference frequency being related to changes in the density of the fluid contained within the low loss portion of the conduit and encircled by the cavity.

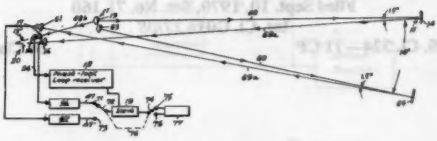
3,688,189

REAL-TIME INITIAL ATMOSPHERIC GRADIENT MEASURING SYSTEM

James J. Lamb, Cupertino, Calif., assignor to The United States of America as represented by the Secretary of the Army

Filed May 28, 1971, Ser. No. 148,001
Int. Cl. G01r 27/04
U.S. Cl. 324—58.5 B **11 Claims**

A preferred embodiment of the invention is a meso-cavity integrating refractometer system for measuring atmospheric refractivity consisting of a single-frequency coherent radio wave interferometer system of obtuse triangular configuration along a slant-path wherein a continuous microwave transmitter located at the obtuse apex of the configuration is adapted to direct a microwave beam signal to a first plane reflector at the most acute apex of the configuration and to direct a microwave beam signal along a horizontal path associated with the slant-path to a second plane reflector on the horizontal path whereby said beams are reflected along their respective paths to the less acute angle of the configuration to receiver means located thereat and comprising a phase-lock loop receiver in combination with a slave receiver. First receiving antenna means coupled to first input means to the slave receiver is oriented and critically aimed to the reflected beam along the slant-path and second receiving antenna means coupled to second input means to the slave receiver is oriented and critically aimed to the reflected beam along the horizontal path. The phase-lock loop receiver is phase-locked to the horizontal path microwave signal and supplies locally



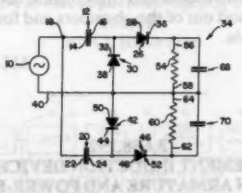
generated oscillatory energy to the slave receiver for intermediate frequency conversion, detection, and phase reference. The slave receiver has incorporated therein a phase comparator providing as an output resultant difference voltages proportional to the phase angle between the intermediate frequency voltages of the slave receiver which are derived from the slant-path microwave beam and the microwave beam directed and reflected along the horizontal path. Switching means are provided whereby the first input means and the second input means are alternately switched to the input of the slave receiver whereby the outputs of the slave receiver are varying D.C. voltages directly proportional to the variations in the atmospheric refractivity along the slant-path and horizontal path, respectively.

3,688,190

DIFFERENTIAL CAPACITANCE CIRCUITRY FOR DIFFERENTIAL PRESSURE MEASURING INSTRUMENTS

Michael J. Blum, Fullerton, Calif., assignor to Beckman Instruments, Inc.

Filed Sept. 25, 1970, Ser. No. 75,596
Int. Cl. G01r 27/26
U.S. Cl. 324—61 R **6 Claims**



Capacitance measuring circuitry is disclosed which includes a source of alternating current and a first capacitor having two plates connected on one plate to a first terminal of the alternating current source. A second capacitor is connected on one plate to the same terminal of the alternating current source. A first diode is connected at its anode to the second plate of the first capacitor and a second diode is connected at its cathode to the second plate of the first capacitor. A filter network is connected to the cathode of the first diode and the anode of the second diode with the anode of the second diode being connected to a second terminal of the alternating current source. A third diode is connected at its cathode to the second plate of the second capacitor and a fourth diode is connected at its anode to the second plate of the second capacitor. The

anode of the third diode and the cathode of the fourth diode are connected to the filter network and the anode of the third diode is connected to the second terminal of the alternating current source.

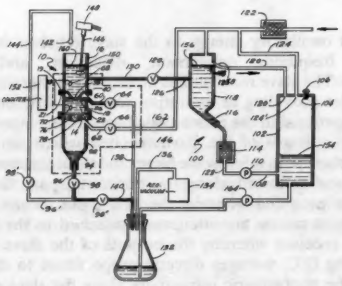
The circuitry enables precise comparison and measurement of small capacitances such as those encountered with differential pressure measurement instruments.

3,688,191

ELECTRONIC PARTICLE STUDY APPARATUS WITH FLUID CIRCULATING SYSTEM

William A. Claps, Hialeah, Fla., assignor to Coulter Electronics, Inc., Hialeah, Fla.

Filed Sept. 10, 1970, Ser. No. 71,160
Int. Cl. G01a *27/08*
U.S. Cl. 324—71 CP **24 Claims**



Electronic particle study apparatus for studying particles, particularly those whose density and size make difficult maintenance of a dispersion in a fluid medium and which permits total sample recovery. A pair of chambers is provided through which a continuously filtered electrolyte flows. The chambers are separated by a Coulter type scanning aperture means and drip chamber means is provided for electrically isolating one of said chambers. A recirculating system for supplying filtered electrolyte to the chambers including storage means, recirculating means, pump means and filter means, for moving of the electrolyte into and out of the chambers and for collecting the particulate sample.

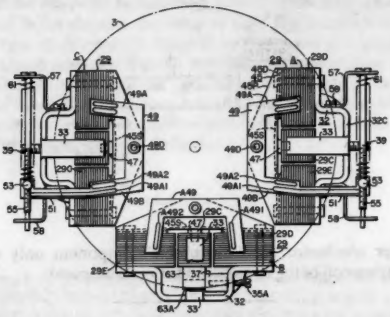
3,688,192

MULTI-ELEMENT INDUCTION DEVICE HAVING COMMON ARMATURE AND POWER-FACTOR ADJUSTERS

James E. Ramsey, Jr., Raleigh, N.C., assignor to Westinghouse Elecric Corporation, Pittsburgh, Pa.

Division of Ser. No. 74,565, Sept. 23, 1970. This application Dec. 3, 1970, Ser. No. 94,843
Int. Cl. G01r *11/22*
U.S. Cl. 324—137 **9 Claims**

An induction watthour meter has multiple elements or electromagnets for applying torques to a common electroconductive armature. An element is provided with an E-shaped voltage electromagnet having a voltage pole and two auxiliary poles in a common plane. A power-factor compensator employs a magnetic path extending between the voltage pole and the auxiliary poles through a soft magnetic block attached to the voltage pole. This magnetic path is linked with an electro conductive loading element. An adjustment is effected by rotation of a screw about an axis parallel to the common



plane. The block also establishes another magnetic path which locates the element torque within a desired range.

ERRATUM

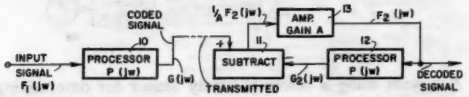
For Class 324—188 see:
Patent No. 3,688,194

3,688,193

SIGNAL CODING AND DECODING SYSTEM

James A. McDonald, Downers Grove, Ill., assignor to Motorola, Inc., Franklin Park, Ill.

Filed Aug. 13, 1969, Ser. No. 849,854
Int. Cl. H04k *1/00*
U.S. Cl. 325—32 **12 Claims**



A first coded signal is developed from an input signal in a processor in a transmitter, and the resulting first coded signal is transmitted to a receiving unit which contains an identical processor. The output of the receiving processor is a second signal which is coupled with the first coded signal to a subtraction circuit wherein one of the first and second coded signals is subtracted from the other and the resulting difference signal is coupled through a high gain amplifier to the second processor. The output signal from the high gain amplifier is substantially the same as the original input signal. The processor can develop a coded signal by combining the input signal with one or more time delayed input signals as desired.

3,688,194

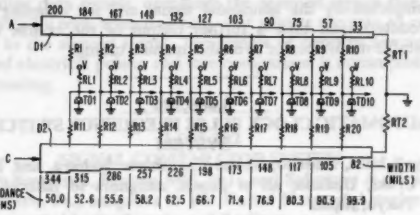
WAVEFORM TRANSIENT MEASURING CIRCUIT AND METHOD

Philippe C. Furois, Fishkill, N.Y., assignor to International Business Machines Corporation, Armonk, N.Y.

Filed May 6, 1970, Ser. No. 35,050
Int. Cl. G04f *9/00*; H03h *9/00*; H01p *3/00*
U.S. Cl. 324—188 **12 Claims**

A waveform transient measuring circuit consisting of two transmission lines and a plurality of spaced coincidence detectors connecting the two lines. The two transmission lines have different propagation rates so that a first signal, introduced into the slower delay line is overtaken by a second signal introduced at a later time into the faster transmission line. The spaced coincidence detectors determine the exact point along

the transmission lines at which predetermined corresponding amplitude conditions occur. By calibrating the transmission lines and precisely positioning the detectors, a very accurate time-amplitude measurement is obtained.

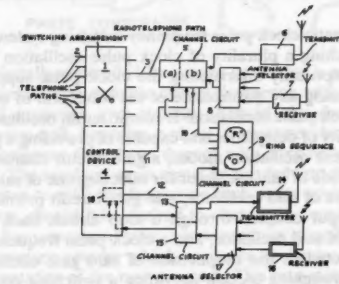


3,688,195

NORMALLY SILENT MOBILE RADIO TELEPHONE SYSTEM

Jean Jacques Muller, Garches, France, assignor to International Standard Electric Corporation, New York, N.Y.

Filed Jan. 6, 1970, Ser. No. 861
Claims priority, application France, Jan. 30, 1969, 6901959
Int. Cl. H04b *1/38*
U.S. Cl. 325—55 **4 Claims**



A mobile radio telephone system is provided in which a "radio hush" condition prevails as long as there is no call or current conversation. The mobile sets are tuned in a standby position to a fixed channel which is only transmitted by the fixed station when there is a selectro call to send out for a terminating call. The station is a standby position is also tuned to a fixed channel (the same, or another one) which is only transmitted by a mobile set starting an originating call. Only a channel-request transmits a free conversation channel marked with an offer tone, and the calling set tunes to this channel for signalling and operation, as usually provided for originating calls.

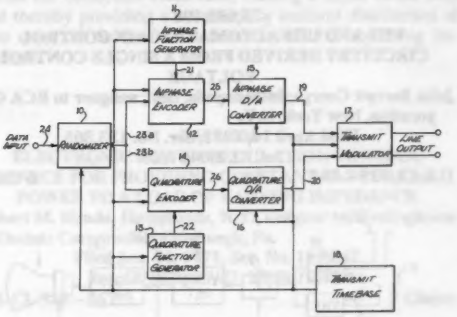
3,688,196

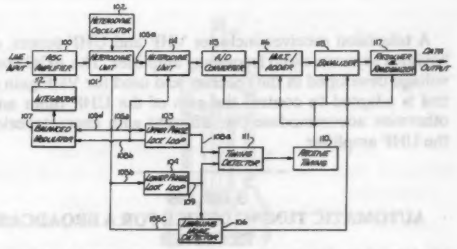
QUADRATURE TRANSMISSION MODERN USING SINGLE SIDEBAND DATA DETECTION

Melvin L. Doelz, Corona Del Mar, Calif., assignor to Control Data Corporation, Santa Ana, Calif.

Filed Nov. 2, 1970, Ser. No. 86,071
Int. Cl. H04b *1/00*
U.S. Cl. 325—60 **18 Claims**

A data communications apparatus for the transmission and receipt of data. Data provided from a data processing system is modulated on two non-interfering in-phase and quadrature channels utilizing time overlapped pulses on each channel. Data modulate a digitally generated transmission signal, the two channels and carrier information being adapted to be transmitted over voice grade communication lines. Received data are detected by single side-band detection techniques,





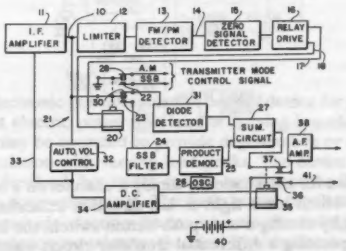
equalized for differential delay distortion effects and serially output to a receiving data processing device.

3,688,197

COMMUNICATION SYSTEM WITH SELECTION MEANS FOR DETERMINING THE MODULATION MODE OF A RECEIVED SIGNAL

Leonard R. Kahn, Freeport, N.Y., assignor to Kahn Research Laboratories, Inc., Freeport, Long Island, N.Y.

Continuation-in-part of Ser. No. 758,560, Sept. 9, 1968, Pat. No. 3,588,701. This application April 5, 1971, Ser. No. 131,098
Int. Cl. H04b *1/16*
U.S. Cl. 325—315 **13 Claims**



A communication system which includes a receiver capable of receiving signals having (1) amplitude modulation, (2) single sideband with full carrier and (3) single-sideband with reduced or (4) suppressed carrier. A selection circuit automatically senses the modulation mode of the received signal and thereby controls the selection of the receiver circuit and

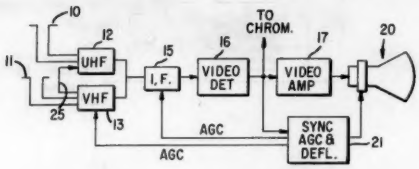
the selection of a transmitter circuit if desired. Squelch circuitry is also provided to disable the receiver output when the signal-to-noise ratio of the received signal is below a predetermined value.

3,688,198

VHF AND UHF AUTOMATIC GAIN CONTROL CIRCUITRY DERIVED FROM A SINGLE CONTROL VOLTAGE

John Barrett George, Indianapolis, Ind., assignor to RCA Corporation, New York, N.Y.

Filed April 14, 1971, Ser. No. 133,805
Int. Cl. H04b 1/28
U.S. Cl. 325—404 **6 Claims**



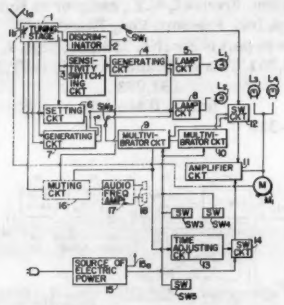
A television receiver includes VHF and UHF tuners, each having a separate radio frequency amplifier. The AGC control voltage developed in the receiver and used for VHF gain control is adapted to control the gain of the UHF tuner and to otherwise accommodate the different gain characteristics of the UHF amplifier.

3,688,199

AUTOMATIC TUNING DEVICE FOR A BROADCAST RECEIVER

Yoshifumi Saeki, No. 19-2, 1-chome, Kita-machi, Kichijyoji, Musashino-shi, Tokyo, and Seiichiro Kurihara, No. 6-4, 6-chome, Koyama, Shinagawa-ku, Tokyo, both of Japan

Filed May 13, 1970, Ser. No. 36,824
Claims priority, application Japan, May 13, 1969, 44/36339; May 13, 1969, 44/36340; May 13, 1969, 44/36341; May 13, 1969, 44/36342; May 13, 1969, 44/36343
Int. Cl. H04b 1/32
U.S. Cl. 325—469 **5 Claims**



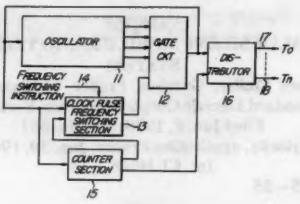
A device for automatically tuning a channel on a broadcast receiver which has a right or left direction indicating circuit operated by closing a start push-button switch, the indicating circuit operating a differential amplifier circuit which in turn operates an electric motor which turns a variable condenser. The device further comprises a coarse tuning pulse signal generating circuit to generate a pulse signal when the condenser is near the tuning point, and a coarse tuning bistable multivibrator which is switched by a pulse signal from the coarse tuning pulse signal generating circuit to shut off the power to the right or left direction indicating circuit. When the indicating circuit is switched, a sinusoidal signal from a discriminator is applied to an input of the differential amplifying circuit. The device also has a switching circuit for de-energizing the differential amplifying circuit after the fine tuning is completed by the sinusoidal signal and for delaying for a predetermined time a further output of the coarse tuning bistable multivibrator to enable manual tuning.

3,688,200

AUTOMATIC CLOCK PULSE FREQUENCY SWITCHING SYSTEM

Ryoji Miki, Hadano; Kouzo Kayashima, Isehara, and Tsuneo Uraki, Hadano, all of Japan, assignors to Hitachi, Ltd., Tokyo, Japan

Filed April 27, 1971, Ser. No. 137,776
Claims priority, application Japan, May 4, 1970, 45/37517
Int. Cl. H03k 1/16, 1/18
U.S. Cl. 328—62 **6 Claims**



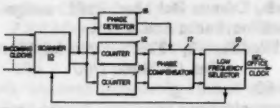
An automatic clock pulse frequency switching system capable of switching a plurality of clock pulse oscillation modes without temporarily interrupting the clock pulse supply and without causing any disturbance of the waveform of the subsequent clock pulse oscillation. It comprises an oscillator having a plurality of delay lines and capable of providing a plurality of different oscillation modes, a gate circuit connected to the output side of said oscillator for selecting one of said oscillation modes of said oscillator, said gate circuit providing an inverse output coupled through a loop circuit back to the input side of said oscillator, and a clock pulse frequency section connected to the output side of said gate circuit, said frequency switching section providing a switching command for the switching of oscillation modes to said gate circuit in accordance with external instructions given in a synchronous relation to the prevailing clock pulse oscillation, said switching command being delivered during part of the prevailing clock pulse waveform available from said gate circuit during which said prevailing waveform is insignificant to said circuit.

3,688,201

FREQUENCY DISCRIMINATOR CIRCUIT FOR SELECTING ONE OF TWO CLOCK SIGNALS

Owe A. Pommerening, Webster, N.Y., assignor to Stromberg-Carlson Corporation, Rochester, N.Y.

Division of Ser. No. 97, Jan. 2, 1970. This application June 28, 1971, Ser. No. 157,176
Int. Cl. H03d 13/00
U.S. Cl. 328—133 **3 Claims**



In a digital signalling network of the kind in which only data pulses are transmitted among the different stations, and more than one of the stations includes means for producing clock signals, synchronization of the network is achieved by produc-

ing at each station, in response to received data pulses, derived clock signals at the same rates as the clock signals produced at each of the other stations. Each station scans all available clock signals, its own and all those derived from the incoming data signals, compares the scanned signals one by one with its own operating rate, and adjusts the rate to conform to the slowest signal. The signals of concern are time-spaced electrical pulses, and rate comparison is accomplished by counting.

3,688,202

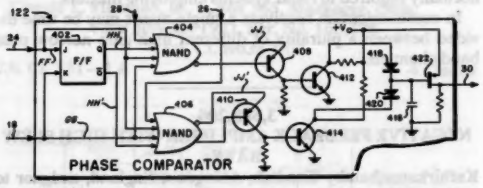
SIGNAL COMPARATOR SYSTEM

Henry Naubereit, Browns Mill, N.J., and Salvatore A. Picard, Hatboro, Pa., assignors to The United States of America as represented by the Secretary of the Navy

Division of Ser. No. 716,155, March 28, 1968, Pat. No. 3,550,015, which is a division of Ser. No. 600,660, Dec. 9, 1966, Pat. No. 3,383,619. This application Aug. 10, 1970, Ser. No. 62,694

Int. Cl. H03d *13/00*

U.S. Cl. 328—133 **7 Claims**



A digitally controlled frequency generator is provided having a selectively variable output frequency with crystal controlled accuracy and stability. Should the desired output frequency drift, however, a phase comparator detects the drift and compares the phase thereof with a provided reference signal. The resultant error signal is then fed into the frequency generator to shift the frequency back to its original value. In addition, should it be desired to change the output frequency of the frequency generator, a new program is applied to a variable program counter which produces an electronic response representative of the new program. This response is sensed by both the phase comparator and an acquisition circuit, the acquisition circuit providing signals to the phase comparator to achieve a "lock-in" of the system at the new desired frequency.

3,688,203

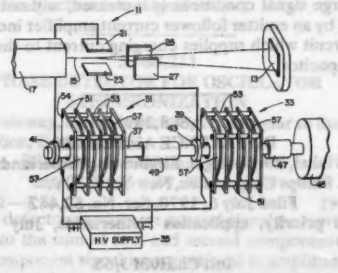
SCANNING SYSTEM FOR ION IMPLANTATION ACCELERATORS

Stanley Harrison, Bedford, Mass., assignor to KEV Electronics Corporation, Wilmington, Mass.

Filed Nov. 10, 1970, Ser. No. 88,406

Int. Cl. H01j *29/70*

U.S. Cl. 328—229 **1 Claim**



In the scanning system disclosed herein, each of the deflection electrodes of an ion implantation accelerator is connected to a rotating sector-shaped electrode which, as it rotates, passes by and forms a capacitor with each of a series of charged stator electrodes, the stator electrodes being oppositely charged in alternation. Accordingly, an alternating potential of substantially triangular waveform is developed across the deflection electrodes, causing a linear beam scan and thereby providing a substantially uniform distribution of ions over the surface of a semiconductor body being implanted.

3,688,204

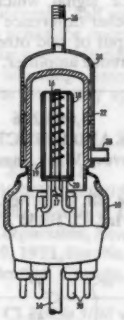
ELECTRONIC POWER REGULATION CONTROL DEVICE FOR PROVIDING CONSTANT ELECTRICAL POWER TO A LOAD OF VARYING IMPEDANCE

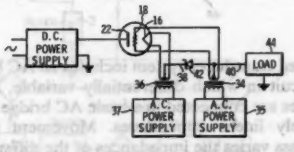
Robert M. Hruda, Horseheads, N.Y., assignor to Westinghouse Electric Corporation, Pittsburgh, Pa.

Filed Jan. 26, 1971, Ser. No. 109,847

Int. Cl. H01j *19/82*; **H03k** *19/82*

U.S. Cl. 328—267 **7 Claims**





An electronic power regulation control device for providing constant electric power to a load of varying impedance. The device may be operated to provide degenerative or regenerative regulation with varying load peaks. The device does not require feedback but under certain conditions feedback may enhance the performance. The basic power regulating device is a thermionic electron device wherein the voltage-current characteristic approximates the ideal hyperbolic curve of constant power. This is accomplished by combining the characteristics of a current limiting, temperature limited thermionic diode in conjunction with that of a thermionic triode in a parallel combination. It is also possible to combine the functions of a control diode of high perveance and a control diode of low perveance to also approach a characteristic curve of constant power.

3,688,205

CIRCUIT ARRANGEMENT FOR THE COMPENSATION OF THE DIRECT CURRENT VOLTAGE DISTURBANCE COMPONENT OCCURRING IN THE DEMODULATION OF FREQUENCY-RE-SCANNED BINARY DATA SIGNALS

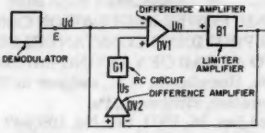
Erich Burger, Rossinistrasse 10, 8 Munich 23, Germany

Filed July 30, 1970, Ser. No. 59,545

Claims priority, application Germany, July 31, 1969, P 19 39 067.1

Int. Cl. H03d 3/00

U.S. Cl. 329—132 4 Claims



A circuit arrangement for compensation of the direct current disturbance component in the demodulation of frequency modulated binary data signals is described. The discriminator output is coupled to a first input of two difference amplifiers. A limiter at the output of one of the difference amplifiers produces a correct d.c. signal, which signal is coupled to a second input of the other difference amplifier. A timing element couples the output of said other amplifier to a second input of said one difference amplifier.

3,688,206

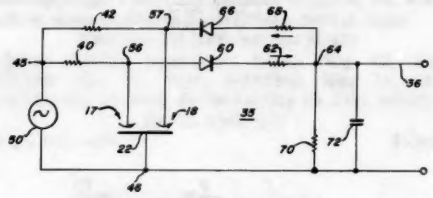
AC BRIDGE AND DETECTOR CIRCUIT

Melvin O. Eide, Bellevue, Wash., assignor to United Control Corporation

Filed Sept. 28, 1970, Ser. No. 76,050

Int. Cl. H03d 1/10

U.S. Cl. 329—204 8 Claims



A servoed transducer system includes an AC bridge and detector circuit in which differentially variable, linear sensing impedances are connected in a basic AC bridge configuration using solely linear impedances. Movement of a pivoted seismic mass varies the impedances of the differential sensing impedances, unbalancing the AC bridge and generating a pair of cyclic signals coupled to a detector circuit which includes a pair of nonlinear rectifiers connected through resistive means to a summing junction. An integrator connected to the summing junction produces an error voltage which is amplified in a servo amplifier and used to power a torque coil which generates a magnetic field to rebalance the seismic mass.

3,688,207

HIGH SPEED TUNABLE MASER FOR USE IN RADAR AND COMMUNICATION RECEIVERS

Lewis C. Morris, Cheltenham, Pa., assignor to Radio Corporation of America

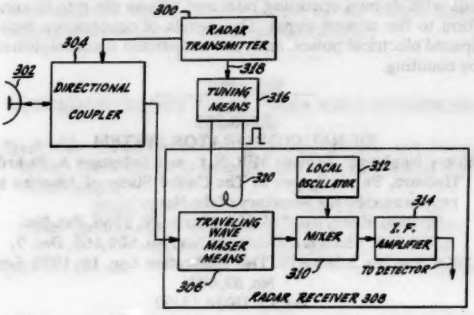
Filed March 20, 1967, Ser. No. 624,407

Int. Cl. H01s 1/00; G01s 9/08

U.S. Cl. 330—4 3 Claims

The technique of tuning a maser at a high rate is used for improving radar receivers and communication receivers.

In radar receivers, the maser which is used as the first stage thereof, is detuned from the radar transmitter frequency during the time interval in which each exploratory pulse is being transmitted. This avoids the need for high power transmit-



receive isolation means providing 80–90 db. of attenuation normally required in radar systems employing masers.

In communication receivers a single maser may be time divided between a plurality of different high gain narrow pass band channels.

3,688,208

NEGATIVE FEEDBACK AMPLIFIER WITH HIGH SLEW RATE

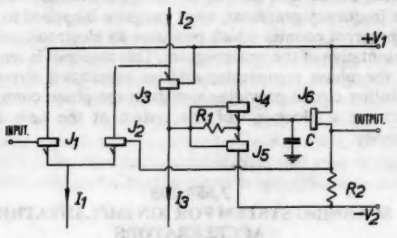
Kathirkamathamby Kandiah, Abingdon, England, assignor to United Kingdom Atomic Energy Authority, London, S.W.1, England

Filed May 1, 1970, Ser. No. 33,562

Claims priority, application Great Britain, May 5, 1969, 22,912/69

Int. Cl. H03f 3/18

U.S. Cl. 330—13 3 Claims



Loop gain stability in a high gain electrical amplifier employing negative feedback is secured by incorporating a compensating capacitor. The rate of change of output (slew rate) under large signal conditions is increased, without forfeiting stability, by an emitter follower current amplifier incorporated in the circuit which supplies charging current to the compensating capacitor.

3,688,209

DIFFERENCE AMPLIFIER

Jan Te Winkel, Emmasingel, Eindhoven, Netherlands, assignor to U.S. Philips Corporation, New York, N.Y.

Filed July 6, 1970, Ser. No. 52,442

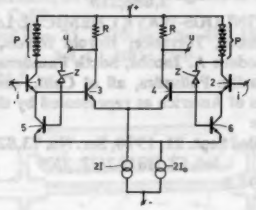
Claims priority, application Netherlands, July 23, 1969, 6911359

Int. Cl. H03f 3/68

U.S. Cl. 330—30 D 8 Claims

A Darlington difference amplifier in which the offset volt-

age, produced by the difference between the current amplification factors of the output transistors, is reduced by such a



feedback that substantially no signal voltage appears across the base-emitter junctions of the input transistors.

3,688,210

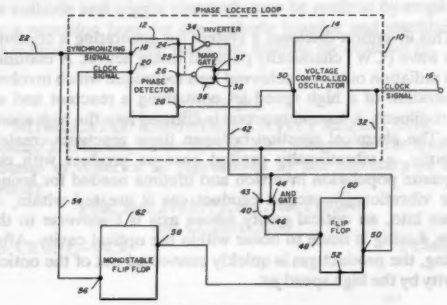
APPARATUS TO PROTECT A PHASE-LOCKED-LOOP AGAINST LOSS OF SYNCHRONIZING SIGNAL

Larry W. Fort, 1217 E. Hartford, Broken Arrow, Okla., and Connie T. Marshall, Rt. 5, Box 365, Muskogee, Okla.

Filed July 16, 1971, Ser. No. 163,178

Int. Cl. H03b *3/04*

U.S. Cl. 331—1 A **4 Claims**



In this invention a phase-locked-loop has a phase detector which is prevented from passing negative pulses from a first to second terminal, to lower the frequency of the clock signal, whenever synchronizing signal is lost. The synchronizing signal goes to a monostable flip-flop, that puts out a reset signal to a flip-flop, that provides a positive gate enable signal. The negative pulses from the first terminal of the phase detector go through an inverter to one input of a NAND gate, the positive gate enable signal goes to the second input. The output of the gate goes to the second terminal of the phase detector. The flip-flop is continuously set (removing the gate enable signal) and reset (regaining the gate enable signal) so long as the synchronizing signal is present. When the synchronizing signal is lost, the flip-flop is not reset and the gate enable signal is lost until the synchronizing signal returns.

3,688,211

PHASE DETECTOR FOR OSCILLATOR SYNCHRONIZATION

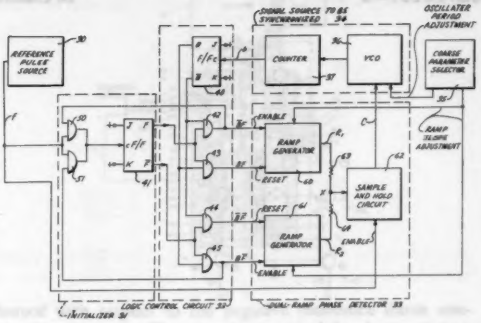
Ward M. Calaway, Sierra Madre, Calif., assignor to Burroughs Corporation, Detroit, Mich.

Filed Dec. 4, 1970, Ser. No. 95,079

Int. Cl. H03b *3/04*; H03d *13/00*

U.S. Cl. 331—1 A **19 Claims**

A phase detector produces a control signal proportional in amplitude to the sum of first and second component signals. The first component signal is proportional in amplitude to the phase difference between a periodic reference signal and the output signal of the oscillator to be synchronized during one time interval and the second component signal is proportional in amplitude to the phase difference between the reference signal and the oscillator output signal during another time interval. The first and second component signals are produced respectively by first and second identical ramp generators that



operate alternately on successive half cycles of the reference signal so that each ramp generator operates at the frequency of the reference signal. The control signal is preferably applied directly to the frequency adjusting element of the oscillator to maintain the oscillator in frequency synchronism with the reference signal.

3,688,212

FREQUENCY SYNTHESIS SYSTEM

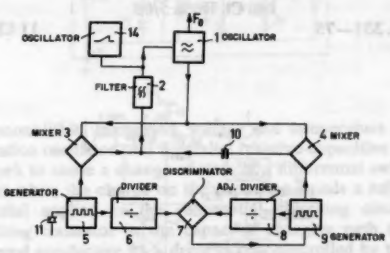
Eduard Herman Hugenholtz, Toronto, Ontario, Canada, assignor to U.S. Phillips Corporation, New York, N.Y.

Filed March 19, 1971, Ser. No. 126,184

Claims priority, application Canada, March 23, 1970, 078082

Int. Cl. H03b *3/08*

U.S. Cl. 331—4 **5 Claims**

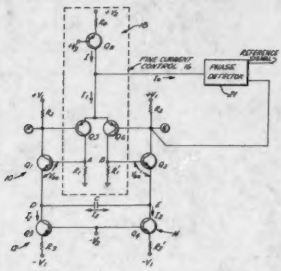


In one embodiment of the invention the frequency of a oscillator is locked to the harmonic of the output of a reference frequency voltage generator by feeding the output voltages from the controllable oscillator and the reference generator to a mixer, capable of producing a direct current voltage output, to produce a control voltage for achieving a locked-in condition or a harmonic of the reference frequency generator output and wherein the output voltage from a further reference frequency generator is mixed with the output of the controllable oscillator to produce a lock disturbing control voltage when the harmonic of the reference generator upon which locked in operation is achieved does not correspond to a particular harmonic of the output frequency of the further reference frequency generator. The frequencies of the reference generators are locked with respect to each other by a divider-frequency discriminator control circuit.

3,688,213
SIGNAL-CONTROLLED CONSTANT AMPLITUDE VARIABLE FREQUENCY MULTIVIBRATOR

Ward M. Calaway, Sierra Madre, Calif., assignor to Burroughs Corporation, Detroit, Mich.

Filed Dec. 4, 1970, Ser. No. 95,077
Int. Cl. H03b 3/04; H03k 3/282
U.S. Cl. 331—8 18 Claims

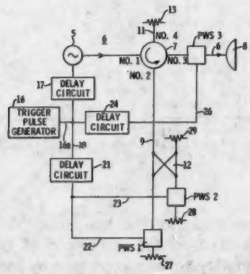


A signal-controlled oscillator includes an astable multivibrator having a pair of alternately conducting switches and energy storage means that determines by the energy it stores which of the pair of switches is conducting. Each switch has an output terminal, at which the oscillator output signal is developed, and a control terminal coupled to the storage means. Means are provided for alternately applying an input control signal to the control terminals of the switches in regenerative phase depending upon which switch is conducting. The oscillator is synchronized in phase to a reference signal responsive to the output of the phase detector to which the reference signal and the oscillator output signal are applied.

3,688,214
MEANS FOR GENERATING NARROW MICROWAVE PULSES

Harry Goldie, 3706 Allenswood Court, Randallstown, Md.

Filed Jan. 23, 1970, Ser. No. 5,165
Int. Cl. H03k 5/08
U.S. Cl. 331—75 11 Claims

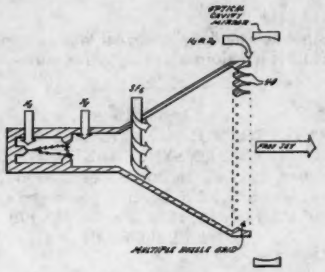


Described is a system for obtaining high power extremely short and narrow pulses in the neighborhood of nanoseconds, wherein the pulses are derived from longer pulses and more specifically by means of two sequential discharges in a nonresonant waveguide section. The narrow rectangular pulses are derived from a longer pulse which is caused to break down sequentially in two sections of a transmission line, each of which includes a low pressure gas acted upon by relatively intense applied fields. By adjusting the triggers for the respective gas discharges high power pulses of selectively variable width may be produced. The two low pressure arc discharges make possible the generation of extremely narrow microwave pulses without the microwave power initiating the breakdown.

3,688,215
CONTINUOUS-WAVE CHEMICAL LASER

Donald J. Spencer, Torrance; Harold Mirels, Rolling Hills Estates; Theodore A. Jacobs, South Pasadena, and Rolf W. F. Gross, Pacific Palisades, all of Calif., assignors to The United States of America as represented by the Secretary of the Air Force

Filed Sept. 21, 1970, Ser. No. 73,820
Int. Cl. H01s 3/22, 3/09
U.S. Cl. 331—94.5 1 Claim

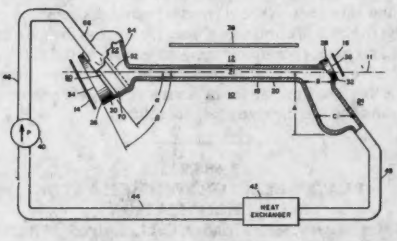


This invention discloses a system for generating a continuous wave (CW) chemically pumped lasing action. A continuous radiation output is achieved by a technique which involves generation of a high speed jet containing a reactant and an inert diluent. A second reactant is diffused into the high speed jet. The chemical reaction between these reactants creates, directly, a vibrationally excited gaseous product with the requisite population inversion and lifetime needed for lasing. The vibrationally excited product gas is created within, or flows into, an optical cavity whose axis is transverse to the flow. Lasing is made to occur within the optical cavity. After lasing, the product gas is quickly convected out of the optical cavity by the high speed jet.

3,688,216
CELL FOR USE IN A CIRCULATING LIQUID LASER

Robert Kocher, Great Neck; Franklin Moore, Ithaca, and Harold Samelson, Sea Cliff, all of N.Y., assignors to General Telephone & Electronics Laboratories Incorporated

Filed Oct. 16, 1970, Ser. No. 81,388
Int. Cl. H01s 3/02, 3/20
U.S. Cl. 331—94.5 9 Claims



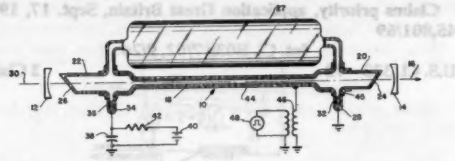
A flowing liquid laser cell has end faces cut at the Brewster angle. Liquid enters the input chamber of the cell parallel to the end face. A rotary motion is imparted to the liquid and a stabilized liquid flow is promptly and smoothly established in the active region of the cell. The cell has an output chamber which allows for deceleration of the liquid leaving the active region.

3,688,217

LASER COLD CATHODE ARRANGEMENT

Robert S. Witte; Lee M. Frantz, both of Redondo, and Eugene R. Peters, Torrance, all of Calif., assignors to TRW Inc., Redondo Beach, Calif.

Filed Dec. 21, 1970, Ser. No. 100,100
Int. Cl. H01s 3/00
U.S. Cl. 331—94.5 10 Claims



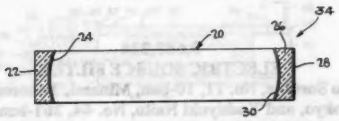
A gaseous ion laser system includes a cold cathode disposed in an envelope portion so as to form a tight or dash pot fit therewith. A trigger electrode is in intimate contact with the exterior surface of the envelope portion and closely spaced above the emitting surface of the cathode so that only a minimum starting voltage is required to preionize the gas. By using as the cathode material, a normally solid metal having a higher melting point than the material of the envelope portion that houses the cathode, the necessary close spacing between the cathode and trigger electrode may be realized by employing a precision bore for the cathode housing and machining the cathode to fine tolerances that provide the dash pot fit.

3,688,218

STIMULATED RADIATION CAVITY REFLECTOR

Thomas J. Gleason, Silver Spring, Md., assignor to The United States of America as represented by the Secretary of the Army

Filed Jan. 29, 1971, Ser. No. 110,844
Int. Cl. H01s 3/08
U.S. Cl. 331—94.5 5 Claims



A stimulated radiation cavity reflector for achieving large mode diameters in a short resonant cavity with low output beam divergence and high stability. The reflector in its simplest form comprises a plano-concave substrate whose plane surface has a reflective coating deposited thereon and whose concave surface has an anti-reflective coating. The effects resulting from the use of such a back-surface positive mirror in a laser cavity is shown to be similar to the effects resulting from the use of a front-surface plano-convex negative mirror in the same cavity. The relationship of the radii of curvature of an equivalent back-surface positive mirror to a given negative mirror is described herein.

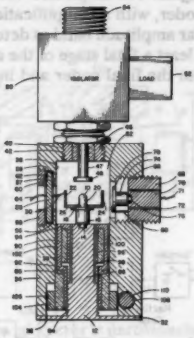
3,688,219

ELECTRICALLY AND MECHANICALLY TUNABLE MICROWAVE POWER OSCILLATOR

Richard Calvin Havens, Scottsdale, Ariz., assignor to Motorola, Inc., Franklin Park, Ill.

Filed Oct. 28, 1970, Ser. No. 84,640
Int. Cl. H03b 7/06
U.S. Cl. 331—107 R 16 Claims

A high efficiency, negative resistance microwave power oscillator is disclosed which is tunable over a wide frequency range by applying a variable voltage to a varactor which is coupled to the resonant cavity of the oscillator and also by varying the size of the cavity as by moving a part of the floor



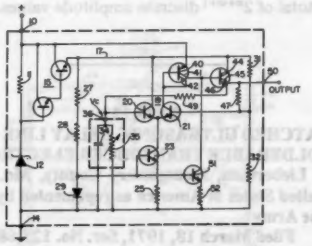
thereof with respect to the negative resistance diode contained in the cavity. The power output and the electronic tuning sensitivity change little over the mechanical tuning range

3,688,220

STABLE DIFFERENTIAL RELAXATION OSCILLATOR

Michael J. Gay, Scottsdale, Ariz., assignor to Motorola, Inc., Franklin Park, Ill.

Filed June 1, 1971, Ser. No. 148,827
Int. Cl. H03k 3/282
U.S. Cl. 331—111 13 Claims



A monolithic, integrated, voltage and temperature stable, relaxation oscillator uses a parallel resistive-capacitive timing network to cause a change of state of a differential switching circuit when the charge on the capacitor equals a reference potential applied to the differential switching circuit. A switching transistor in the capacitor charging path then is rendered conductive by a drive circuit controlled by the differential switching circuit. The drive circuit is supplied from a higher B+ potential than that applied to the collector of the switching transistor to minimize the effect of temperature caused variations in the base-emitter voltage characteristics of the switching transistor on the circuit.

3,688,221

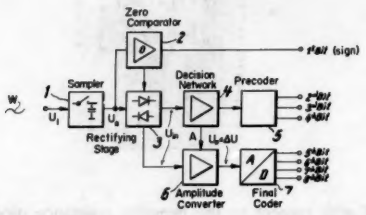
TWO-STAGE PCM CODER WITH COMPRESSION CHARACTERISTIC

Waldemar Fruhalf, Berlin, Germany, assignor to Krone GmbH, Berlin-Zehlendorf, Germany

Filed March 2, 1971, Ser. No. 120,171
Int. Cl. H03k 7/00
U.S. Cl. 332—11 R 14 Claims

Analog signals within an amplitude range of $\pm 2U_{ref}$ (U_{ref} being a fixed reference potential) are classified by a decision network as falling within one of 2^m positive or negative am-

plitude bands progressively increasing in width by a factor of 2, the identity of the band being registered by a precoder generating *m* bits to which is added a further bit indicating the polarity of the signal. An amplitude converter passes each signal to a final coder, with an amplification factor depending upon the particular amplitude band as determined by the decision network. At least a final stage of the amplitude converter works directly into the final coder and includes one or more



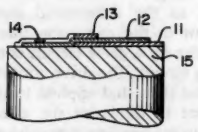
operational amplifiers each with an additive and a subtractive input, the latter being connected to the amplifier output through a feedback circuit which comprises a voltage divider determining the amplification factor and a source of biasing voltage of magnitude $2U_{ref}$ for generating a zero output at the lower limit of each band. For the lowest band, ranging between O and $U_{ref}/2^{(2^m-2)}$, the biasing voltage is cut off. The amplifier output is digitized in the final coder to yield *n* more bits for a total of 2^{n+m+1} discrete amplitude values.

3,688,222

MATCHED ULTRASONIC DELAY LINE WITH SOLDERABLE TRANSDUCER ELECTRODES

Stuart I. Lieberman, Montgomery County, Md., assignor to The United States of America as represented by the Secretary of the Army

Filed March 18, 1971, Ser. No. 125,680
Int. Cl. H03h 7/30
U.S. Cl. 333—30 **10 Claims**



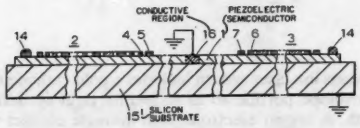
A transducer region of an ultrasonic delay line includes first and second off-set electrode layers located on opposite sides of a piezoelectric layer with only portions of the electrodes being aligned. The first electrode is disposed over part of a surface of the delay line, the piezoelectric layer is located over part of the first electrode, and the second electrode is partially located over the piezoelectric layer in alignment with said part of the first electrode. The offset electrodes permit simple solder connections to be made to a lumped parameter matching impedance without damaging the piezoelectric material.

3,688,223

ELECTROMECHANICAL FILTERS COMPRISING INPUT-OUTPUT INTERDIGITAL ELECTRODES HAVING DIFFERING AMPLITUDE AND FREQUENCY CHARACTERISTICS

Ronald George Pratt, Reigate; William Willis, Sussex, and John Stephenson Singleton, Epsom, all of England, assignors to U.S. Philips Corporation

Filed Sept. 17, 1970, Ser. No. 73,120
Claims priority, application Great Britain, Sept. 17, 1969, 45,801/69
Int. Cl. H03h 7/02, 9/26
U.S. Cl. 333—72 **2 Claims**



An intermediate frequency filter is formed by a strip of piezo-electric material having input and output interdigital transducers respectively to launch and receive a surface elastic wave. The combined frequency responses of the two transducers determine the overall filter response. The respective transducer responses are made to differ, especially with regard to the positions of the nulls. This enables a more satisfactory overall response to be obtained.

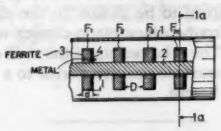
Direct electrical breakthrough from input to output is effectively reduced by placing an earthed conducting layer on the opposite surface of the strip from the transducers. By using a piezo-electric material which is also a semiconductor, a conducting barrier can be formed by diffusion or ion implantation techniques, between the transducers and this barrier can be connected to the conducting layer.

3,688,224

ELECTRIC SOURCE FILTER

Kunihiro Suetake, No. 11, 10-ban, Minami, 3-chome, Meguro-ku, Tokyo, and Yoshiyuki Naito, No. 44, 261-ban, Suenaga, Kawasaki, both of Japan
Eiji Fujiwara, No. 4, 7-ban, Tsuruma ki 4-chome Setagaya-ku, Tokyo, Japan

Continuation-in-part of Ser. No. 855,272, Sept. 4, 1969, abandoned. This application May 14, 1971, Ser. No. 143,348
Int. Cl. H01p 1/20
U.S. Cl. 333—73 C **8 Claims**

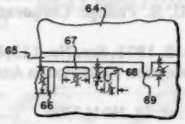


This invention relates to an electric source filter for a coaxial cable. The cable has a plurality of wave absorbing members each containing a ferrite plate arranged between an inner and an outer conduit. Each ferrite plate is lined with a metallic plate and the metallic plate is arranged facing opposite to the direction of the travelling wave for absorbing the electric wave passing through the cable. The metallic plates are arranged in such a manner as not to short circuit the inner and outer conduits.

3,688,225
SLOT-LINE

Seymour B. Cohn, Tarzana, Calif., assignor to The United States of America as represented by the Secretary of the Army

Filed May 21, 1969, Ser. No. 826,314
Int. Cl. H03h 7/10; H01p 7/06, 3/08
U.S. Cl. 333—73 R 5 Claims

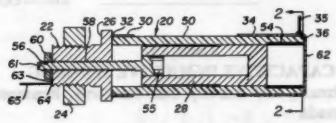


This invention relates to a low loss transmission line having a slotted metal deposited or etched on a high permittivity substrate. With various sizes, shapes and configurations of slots, the transmission line may be used as part of components such as hybrid junctions, couplers, filters, mixers, amplifiers, ferrite devices, and resonators. Novel slot/coax and slot/stripline junctions or connections are disclosed as well as novel methods of slot excitation.

3,688,226
TUBULAR ELECTRONIC REACTOR COMPONENT HAVING AN EMBEDDED ELECTRODE

Frank G. Mezey, Centerport, N.Y., assignor to Victor Insetta, Old Westburg, N.Y.

Filed July 17, 1970, Ser. No. 55,854
Int. Cl. H03h 7/30; H03j 3/22
U.S. Cl. 333—82 9 Claims



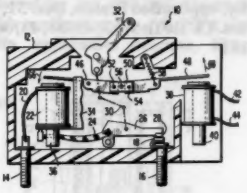
An electronic reactor component is comprised of a tubular, monolithic, dielectric body in which is embedded a thin metallic electrode. The component is formed by bonding a metallic layer to a thin, flexible dielectric film or sheet, spirally winding the sheet and layer on a cylindrical form so that the metallic layer is coiled inside the coiled sheet, and firing the coiled sheet and layer to form the tubular monolithic, dielectric body in which the metallic electrode is embedded. A helical metallic layer may be bounded to the exterior of the dielectric body to constitute an inductor. The helical layer may be applied before or after firing the coiled sheet and internal metallic layer.

3,688,227
IMPEDANCE PROTECTOR

Kyonghi Hong, 9722 Gwynn Park Dr., Ellicott City, Md.

Filed Nov. 9, 1970, Ser. No. 87,748
Int. Cl. H01h 83/20
U.S. Cl. 335—7 9 Claims

Disclosed is a circuit breaker whose trip characteristic is a function of both current and voltage. A single armature is acted on by both a current coil having a delay and a voltage coil without delay. As a result, trip time for overcurrents accompanied by undervoltage is substantially reduced. The

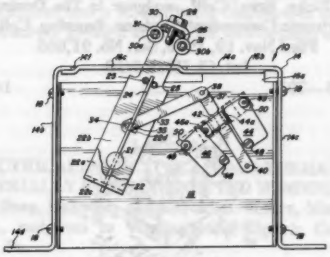


breaker or impedance protector is particularly adapted for use in "soft" power systems such as those employing fuel cells or engine generators.

3,688,228
ACTUATING MECHANISM FOR OPERATING HANDLE OF ELECTRICAL SWITCHING DEVICE

Neil R. Palmer, Cedar Rapids; Joseph R. Karge, Anamosa, and Kenneth W. Erickson, Cedar Rapids, all of Iowa, assignors to Square D Company, Park Ridge, Ill.

Filed Sept. 21, 1971, Ser. No. 182,328
Int. Cl. H01h 3/02
U.S. Cl. 335—68 10 Claims

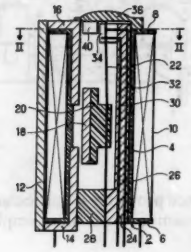


A remote-control actuating mechanism for the handle of an electric circuit breaker. A single-pole double-throw switch selectively controls the direction of rotation of a gearmotor output shaft and of a crank arm resiliently connected thereto by a flat overtravel spring. The crank arm is provided with a cross member connected to the circuit breaker handle. A pair of alternately operated normally closed ON and OFF limit switches interrupt the flow of current through the motor of the gearmotor respectively in opposite directions. An operating member for the limit switches is disposed between their depressible operating buttons and is provided with a lost-motion connection either to the crank arm or to the flat overtravel spring, the lost-motion enabling the circuit breaker handle to move to tripped position without affecting the limit switches. Friction holds the limit switch operating member in position when the circuit breaker trips and also when the driving force thereon in either direction is released by the opening of the circuit through the motor. The frictional force on the limit switch operating member is greater than the restoring force on the depressible operating button of a limit switch, and hunting, i.e., repeated starting and stopping of the motor, is eliminated.

3,688,229
MINIATURE ELECTROMAGNETIC RELAY

Paul Bloch, Strasbourg-Meinau, France, assignor to La Telephonie Industrielle et Commerciale "Telic", Strasbourg-Meinau, France

Filed Dec. 31, 1970, Ser. No. 103,070
Claims priority, application France, Dec. 31, 1969, 6945735
Int. Cl. H01h 9/02, 45/04, 45/06
U.S. Cl. 335—151 10 Claims

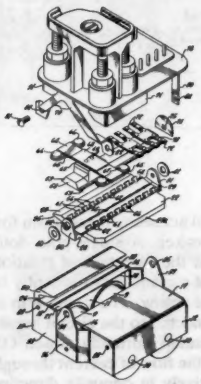


Electromagnetic relay comprising a fixed magnetic circuit and a movable armature for switching pairs of movable conductors. The movable conductors and the armature are installed inside the casing supporting the excitation winding at one end thereof and the release of the armature is provided by the spring portion of the movable conductors which are made in the shape of elastically flexible wires and are secured with this armature.

3,688,230
RELAY

Melvyn R. Tichy, Brea, Calif., assignor to The Deutsch Company Electronic Components Division, Banning, Calif.

Filed Nov. 19, 1970, Ser. No. 91,005
Int. Cl. H01h 9/30
U.S. Cl. 335—201 14 Claims

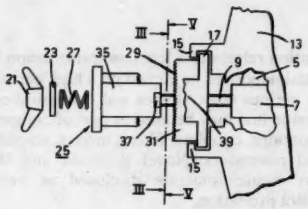


A relay including an armature moving in a gap between pole pieces in which the grain of the material of the pole piece and armature extends to the surfaces at the gap to reduce reluctance, a contact carrier being secured to the armature by tabs twisted to overlap the flanges on the contact carrier, the armature being mounted on journals formed from brackets at the ends of the armature, with the journals being produced by reducing the material in thickness locally and deforming it outwardly into a die complementary to the contour of the journal. An insulator is retained at one end of the armature assembly by a wedge-shaped projection on the contact carrier that is received in an opening in the insulator. An arc barrier for the stationary contacts has slots that receive the contact shanks and a transverse wall having an opening between the contacts so that flow of gas in induced to suppress an arc between the contacts as the armature is actuated.

3,688,231
ADJUSTABLE MOUNTING ASSEMBLY FOR A SET OF DEFLECTION COILS

Martin Clemens Van Der Heijde, and Adriaan Jacob Groothoff, both of Emmasingel, Eindhoven, Netherlands Antilles, assignors to U. S. Philips Corporation, New York, N.Y.

Filed Feb. 8, 1971, Ser. No. 113,495
Claims priority, application Netherlands Antilles, March 17, 1970, 7003740
Int. Cl. H01f 7/00
U.S. Cl. 335—210 4 Claims



A set of deflection coils having a screw bolts and lock nuts permanently connected to the set of coils for mounting in a supporting cage by means of a device enabling both an axial adjustment of the set of coils and an angle adjustment thereof by rotation about its axis.

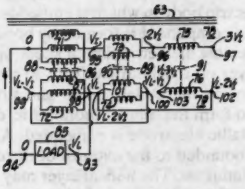
ERRATUM

For Class 335—202 see:
Patent No. 3,688,234

3,688,232
CAPACITIVE INDUCTIVE WINDING

Gabor Szatmari, 190 Bartley Bull Parkway, Brampton, Ontario, Canada

Filed Feb. 16, 1971, Ser. No. 115,479
Int. Cl. H01f 15/14
U.S. Cl. 336—69 28 Claims



An improved capacitive inductive winding is disclosed for use with devices requiring an inductance and a series or shunt capacitance. The disclosed invention is a high reactance winding having a nearly uniform current density within the conductive foils, and having a substantially increased capacitance and volt-ampere capacity over the prior art. The invention is suitable for use with devices requiring a high starting voltage and a constant wattage operation such as gaseous discharge devices. The invention is also applicable for use with voltage and wattage regulators, ballasts and ferro-resonant transformers. The foregoing abstract is merely a resume of one general application, is not a complete discussion of all principles of

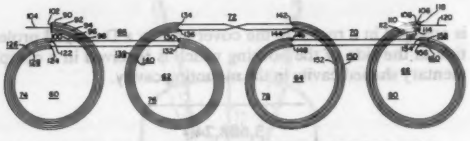
operation or applications, and is not to be construed as a limitation on the scope of the claimed subject matter.

3,688,233

ELECTRICAL INDUCTIVE APPARATUS HAVING SERIALLY INTERCONNECTED COILS

Harold R. Moore; Harral T. Robin, and William B. Wallace, all of Muncie, Ind., assignors to Westinghouse Electric Corporation, Pittsburgh, Pa.

Filed March 12, 1971, Ser. No. 123,548
Int. Cl. H01f 27/28
U.S. Cl. 336—183 **3 Claims**



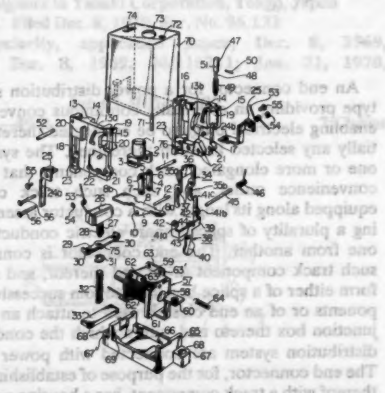
Electrical inductive apparatus having pancake-type coils which are serially interconnected to form a winding group. The conductors forming the coils in the winding group are divided into at least two conductor groups by unique lead brazing techniques. Adjacent coils are interconnected by alternate start-start and finish-finish connections. The transposition furnished by the finish-finish connection reduces the circulating currents in the coils due to leakage flux.

3,688,234

PUSH BUTTON TYPE CIRCUIT PROTECTOR

Akira Yoshino, Owari-Asahi, Japan, assignor to Matsushita Electric Works, Ltd., Osaka, Japan

Filed April 13, 1971, Ser. No. 133,523
Claims priority, application Japan, April 27, 1970, 45/36134; April 27, 1970, 45/36135; April 27, 1970, 45/36136
Int. Cl. H01h 13/04
U.S. Cl. 335—202 **9 Claims**



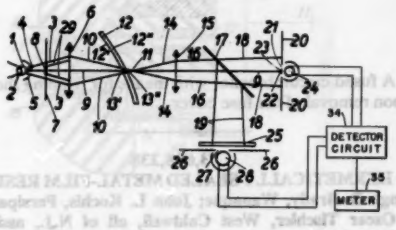
A small size circuit protector of push button type in which an electromagnetic device is disposed in the upper part of an insulation base, an insulative housing comprising built-in push buttons for said electromagnetic device, a contact mechanism, and a drive mechanism for driving said contact mechanism is disposed above said electromagnetic device, said insulative housing and electromagnetic device are covered with a case having an opening in its lower part, and said case is mounted on said insulation base.

3,688,235

APPARATUS FOR DETECTING THE ANGULAR DEFLECTION IMPARTED TO A BEAM PASSING THROUGH A TRANSPARENT SHEET

Paul Migeotte, Montigny-le-Tilleul, Belgium, assignor to Institut National du Verre A.S.B.L., Charleroi, Belgium

Continuation of Ser. No. 538,864, March 30, 1966, abandoned. This application Jan. 15, 1970, Ser. No. 3,218
Claims priority, application Belgium, March 31, 1965, 48,289
Int. Cl. G01n 21/32
U.S. Cl. 356—239 **14 Claims**



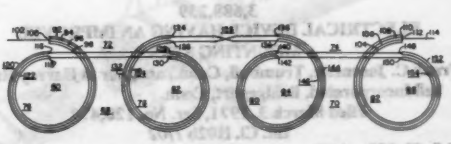
A method and apparatus for determining the angular deflection imparted by a sheet of transparent material to a light beam passing therethrough by projecting at least one light beam through such sheet and detecting at least one portion of the beam at a location whose relation to the path which would be followed by the beam if no sheet were present is such that the light level of such portion varies as a function of the angular beam deflection, this detection being effectuated by a light sensitive element and a screen being disposed in the path of the light beam for giving it at least one well-defined boundary.

3,688,236

ELECTRICAL INDUCTIVE APPARATUS HAVING SERIALLY INTERCONNECTED WINDINGS

Virgil L. Boaz, Daleville, and Harold R. Moore, Muncie, both of Ind., assignors to Westinghouse Electric Corp., Pittsburgh, Pa.

Filed March 12, 1971, Ser. No. 123,590
Int. Cl. H01f 27/28
U.S. Cl. 336—187 **14 Claims**



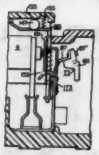
Electrical inductive apparatus having interleaved winding groups. The conductors forming the coils in the winding groups are divided into at least two conductor groups by unique lead brazing techniques. The series connection, which interconnects the winding groups, is divided into at least two conductor groups which are brazed together individually. The opposing relationship of the leakage flux induced voltages provided by this invention reduces the circulating currents in the winding.

3,688,237

FUSED CIRCUIT BREAKER

Alex Orosz, Jr., Beaver Falls, and Lawrence B. St. Clair, Beaver, both of Pa., assignors to Westinghouse Electric Corporation, Pittsburgh, Pa.

Filed April 13, 1970, Ser. No. 27,723
Int. Cl. H01h 73/06, 73/50, 85/56
U.S. Cl. 337—7 2 Claims



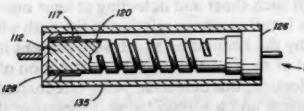
A fused circuit breaker with means for tripping the breaker upon removal of the fuse cover.

3,688,238

HERMETICALLY SEALED METAL-FILM RESISTOR

Hugh B. Brady, Wanaque; John L. Kochis, Parsipanny, and Oscar Tischler, West Caldwell, all of N.J., assignors to Pyrofilm Corporation, Whippany, N.J.

Filed March 19, 1970, Ser. No. 21,168
Int. Cl. H01c 1/02
U.S. Cl. 338—237 9 Claims



A metal film resistor is disclosed as being encapsulated in a vitreous enclosure, e.g. a glass tube, the enclosure being hermetically sealed to conductive caps mounted on the resistor ends by the application of heat. The metal film of the resistance path of the resistor is protected from thermal damage during heat sealing by spacing the resistance path from the conductive caps and providing an electrical path therebetween in the form of an extended termination.

ERRATA

For Classes 338—28 and 338—49 see:
Patents Nos. 3,688,241 and 3,688,242

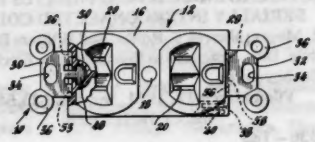
3,688,239

ELECTRICAL DEVICE HAVING AN IMPROVED MOUNTING STRAP

Frank C. Jaconette, Trumbull, Conn., assignor to Harvey Hubbell Incorporated, Bridgeport, Conn.

Filed March 3, 1971, Ser. No. 120,478
Int. Cl. H02b 1/02
U.S. Cl. 339—14 R 13 Claims

An improved mounting strap is provided for electrical devices, such as outlet receptacles and switches which are mounted in wall outlet boxes. The improved mounting strap includes a substantially T-shaped key-lock stamped from the mounting extension and the side portion adjacent thereto of the mounting strap for engaging a complementary shaped recess in the insulative cover of the electrical device. In addition, the side portion further includes laterally extended flanges on each side which engage shoulders formed in the side of the housing. If the side portion of the mounting strap includes a grounding flange then that side in addition to being secured by the grounding screw is locked to the body of the device by an upward projection on the grounding flange which



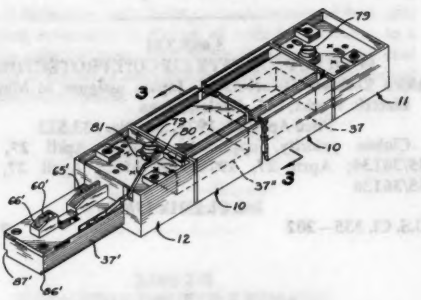
is engaged in a recess in the cover and by a D-shaped projection in the side of the housing which is received in a complimentary shaped cavity in the mounting cavity.

3,688,240

END CONNECTOR FOR A POWER DISTRIBUTION SYSTEM

Larry L. Routh, Castro Valley, and James Contratto, Livermore, both of Calif., assignors to U.S. Industries, Inc., New York, N.Y.

Filed March 16, 1970, Ser. No. 19,660
Int. Cl. H01r 9/00
U.S. Cl. 339—21 R 17 Claims



An end connector for a power distribution system of the type providing an essentially continuous convenience outlet enabling electrical plugs to be connected thereto at substantially any selected location therealong. The system includes one or more elongated track components that provide such convenience outlet, and each such track component is equipped along its length with a conductor assembly comprising a plurality of spaced apart electric conductors insulated one from another. The end connector is connectable with such track component at an end thereof, and may take the form either of a splice box used to join successive track components or of an end closure used to attach an end block or junction box thereto and within which the conductors of the distribution system are connected with power supply lines. The end connector, for the purpose of establishing connection thereof with a track component, has a housing portion insertable into the end of a track component, and it is equipped with a plurality of contacts movable into engagement with the respective conductors of such track component when assembled therewith.

3,688,241

Patent Not Issued For This Number

3,688,242

SHUNT FOR OIL-IMMERSED CIRCUIT BREAKER

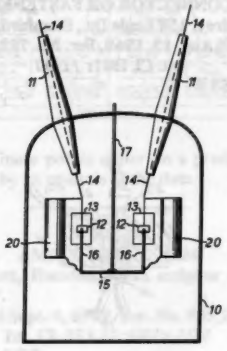
Albert Graham Adwick, and Henry Nicholson, both of North Shields, England, assignors to Morganite Resistors Limited, Jarrow, England

Filed Oct. 21, 1970, Ser. No. 82,683

Claims priority, application Great Britain, Oct. 24, 1969, 52,145/69

Int. Cl. H01c 13/00

U.S. Cl. 338—49 3 Claims



The shunt of an oil-immersed circuit breaker is made of porous refractory conglomerate so that it becomes saturated with oil, whereby on passage of the high electric currents experienced with circuit breakers, the oil is rapidly heated and ejected from the pores to carry away energy at a high rate.

3,688,243

MULTI-TERMINAL CONNECTOR UNIT

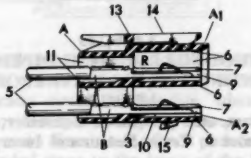
Shoji Yamada, and Yoshiaki Kawaguchi, both of Gotenba, Japan, assignors to Yazaki Corporation, Tokyo, Japan

Filed Dec. 8, 1970, Ser. No. 96,132

Claims priority, application Japan, Dec. 8, 1969, 44/116210; Dec. 8, 1969, 44/116211; Jan. 21, 1970, 45/006109

Int. Cl. H01r 25/00

U.S. Cl. 339—49 R 7 Claims



A multi-terminal connector unit consisting of a pair of connectors formed identically with each other, and each having a male portion and a female portion formed in one body integrally with each other and capable of employing terminal plates of the same structure. Such a multi-terminal connector unit is capable of simplifying a manufacturing process and facilitating a quality control to permit such connector units to be mass-produced.

3,688,244

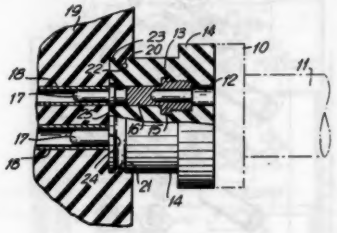
REPLACEABLE INTERMEDIATE SOCKET AND PLUG MEMBER

Paul C. Savoca, 245 W. Shore Drive, Massapequa, Long Island, N.Y., and Anthony D. Marasco, Grumman Ave., Norwalk, Conn., assignors to J. B. Notingham & Co., Inc., New York, N.Y.

Filed July 3, 1969, Ser. No. 838,750

Int. Cl. H01r 11/02

U.S. Cl. 339—60 M 1 Claim



To protect more or less permanently mounted electric receptacles against damage and resulting difficult replacement, the invention provides an intermediate socket member which at one end is provided with prongs which are continuously in engagement within the receptacle, and at its other end is provided with socket elements which receive the prongs of the usual plug at the end of a cable. The damage resulting from sparking and the like is thus suffered only by the intermediate socket member and not by the permanently installed receptacle. Means are also provided for sealing the socket member with respect to the receptacle to prevent access of water and moisture, especially in portable installations exposed to the weather.

3,688,245

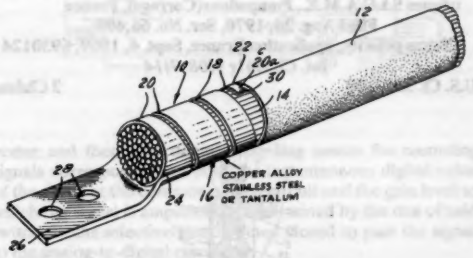
SOLDERLESS LUG CONNECTOR

John E. Lockshaw, 519 Las Riendas Dr., Fullerton, Calif.

Filed March 1, 1971, Ser. No. 119,546

Int. Cl. H02g 15/08

U.S. Cl. 339—95 D 5 Claims

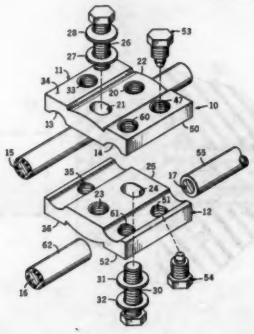


A solderless lug connector to accommodate various sizes of electrical conductors, comprising an elongated tubular body having a helical slot cut along the longitudinal length thereof to form a substantially spring-like member, with its outer free end band terminating with an outwardly turned-up lip, the opposite end thereof being provided with a connecting tongue adapted to be connected to an appropriate mating electrical component.

3,688,246
ELECTRICAL CONNECTOR WITH INSULATION-PIERCING CONTACT PINS

John A. Toedtman, Warson Woods, and Elmer H. Hornung, both of c/o ITT Blackburn Corp. 1525 Woodson Rd., St. Louis, Mo.

Filed June 6, 1968, Ser. No. 735,121
Int. Cl. H01r 9/08
U.S. Cl. 339—95 A 9 Claims

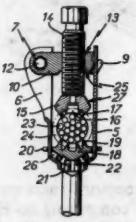


An electrical connector having a contact pin carried by a body and selectively movable into contact with a conductor received in a body socket. The pin is provided with a blunt end having a peripheral cutting edge, and with an end-open recess inside the cutting edge, the recess receiving the conductor material displaced by the cutting edge as the pin penetrates the conductor. The pin is threadedly mounted to achieve a tight, intimate contact with the conductor upon pin rotation. A pair of such contact pins engage diametrically opposite sides of the conductor, each pin providing a back-up for the other. The body includes adjacent sections interconnected by clamping means located between a pair of conductor-receiving sockets, the body sections acting as leaf springs urging contact pins against the conductors. When the contact pin pierces the insulation of an insulated conductor, the severed insulation pad is received in the end-open recess to avoid wedging of insulation between the contact areas.

3,688,247
CABLE CONNECTORS

Marcel Desire Prodel, Troche, France, assignor to Societe Industrielle De Construction D'Appareills Et de Materiel Electriques S.I.C.A.M.E., Pompadour(Correge), France

Filed Aug. 24, 1970, Ser. No. 66,409
Claims priority, application France, Sept. 4, 1969, 6930124
Int. Cl. H01r 9/08, 7/14
U.S. Cl. 339—98 2 Claims

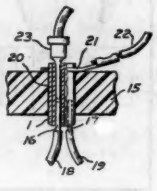


A cable connector for making a branch connection to a main cable comprises a clamp spanning the cable fitted with a closing member traversed by a screw and with an intermediate part resting on the base of the clamp. The screw carries a shoe and by tightening the screw the cable is gripped between the intermediate part and the shoe which have teeth which penetrate to the core of the cable through its insulation. Simultaneously the spread-out, bared end of a branch cable is gripped between the intermediate part and the base of the clamp.

3,688,248
ROLLER METAL PIN FOR USE AS ELECTRIC CONNECTOR OR FASTENER

Henry John Modrey, 158 Eagle Dr., Stamford, Conn.

Filed Aug. 13, 1968, Ser. No. 752,329
Int. Cl. H01r 11/00
U.S. Cl. 339—258 R 4 Claims



There is disclosed a springy rolled metal pin such as a spirally rolled pin, the inner end portion of which is bent inwardly to form a springy tongue dividing the interior of the pin into two chambers. Upon insertion into one of the chambers of a wire of suitable diameter which may be part of an integrated circuit module, and subsequent insertion of the pin into a confining mounting hole, the wire is tightly held in the respective pin chamber by the lateral pressure of the tongue and the radial pressure exerted by the inner peripheral wall of the pin, said radial pressure being caused by the diametrical contraction experienced by the pin when inserted into the mounting hole. There is also disclosed a springy rolled two-part or double pin, the two parts of which have different diameters. When one part of such double pin is inserted into a confining mounting hole, the inserted pin part anchors itself in the hole due to its springiness while the protruding part retains its springiness and is available, for instance, as a springy male contact element for making connection with a tubular female contact element or with the foil conductors on printed circuit boards or with a tubular female.

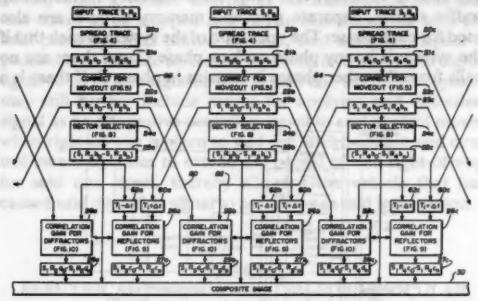
3,688,249
METHOD FOR LOCATING IMPEDANCE DISCOUNTINUITIES IN A WAVE PROPAGATING MEDIUM

Milo M. Backus, and William A. Schneider, both of Dallas, Tex., assignors to Texas Instrument Incorporated, Dallas, Tex.

Filed July 6, 1970, Ser. No. 52,512
Int. Cl. G01v 1/28
U.S. Cl. 340—15.5 DP 11 Claims

A method for digitally processing seismic data, or other similar data derived for propagating wave energy to produce a data image comprised of a plurality of coordinate points is described. Each coordinate point has a value which is a combination of the amplitude values taken from a plurality of primary seismic traces at the travel times on the respective primary traces required for energy to travel from the respective source points to the coordinate point and return to the respective receiving points of the seismic traces. More particularly,

the combination is accomplished in such a way as to increase the signal-to-noise ratio by selected data to be combined at the

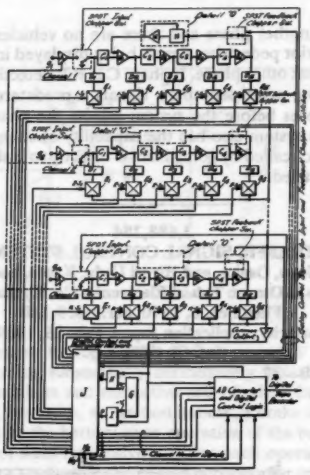


respective coordinate points either on a predetermined basis or automatically by an analysis of the data.

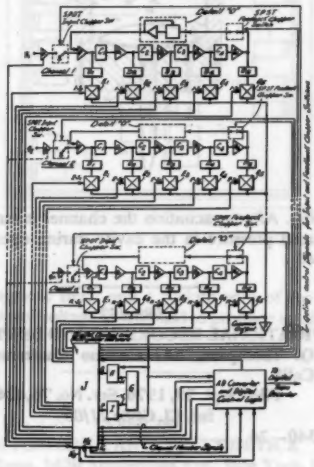
3,688,250
AMPLIFIER SYSTEM

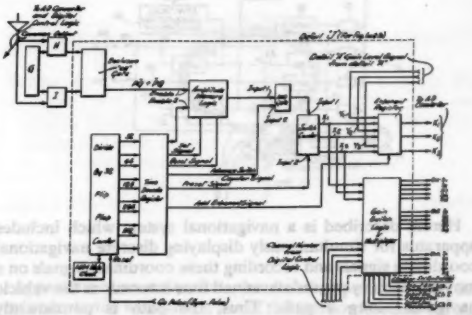
Donald L. Howlett, Houston, Tex., assignor to Texaco Inc., New York, N.Y.

Filed Sept. 4, 1969, Ser. No. 855,172
Int. Cl. 323 *22*; G01v *1/22*
U.S. Cl. 340—15.5 DP **86 Claims**



A wide dynamic range automatic high speed digital gain ranging amplifier system having a plurality of amplifier stages coupled in cascade circuit relationship, wherein improved bandwidth is provided by DC coupling between the successive cascaded stages and a filter in a feedback path from the output of the last cascaded stage to the input of the first cascaded stage together with selectively timed chopper switching means for alternately interrupting the input signal to the cascaded stages and the feedback path in substantially mutually out of phase relationship. The respective outputs of the amplifier stages are coupled through a common output circuit to a comparator circuit for comparison with a predetermined reference signal. Sequencing means are provided for momentarily closing switch means in timed sequence for sequentially coupling the respective outputs of the successive amplifier stages to the comparator circuit during successive, relatively brief sampling time intervals. Means are provided for selectively maintaining one of the switch means in its closed position for a holding time interval of longer duration than the sampling time interval when an output signal coupled through said switch means to the common output circuit during one of the sampling intervals bears a predetermined relationship of the reference signal. In a preferred embodiment of the amplifier system, the common output circuit is coupled to an analog-to-digital converter and thence to digital recording means for recording signals corresponding to both the instantaneous digital value of the signal at the common output circuit and the gain level to which the signal is amplified, as determined by the one of said switch means selectively maintained closed to pass the signal to the analog-to-digital converter.





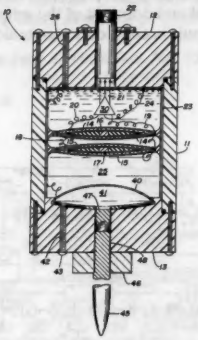
3,688,251
GEOPHONE

Harold B. Morris, Houston, Tex., assignor to Electronic Systems, Inc., Houston, Tex.

Filed April 26, 1971, Ser. No. 137,525
Int. Cl. G01v *1/16*
U.S. Cl. 340—17 **8 Claims**

A geophone which detects and records acceleration includes an airtight housing partially filled with an acoustic

transmission fluid. A diaphragm within the housing forms a cavity from which the air is evacuated through a channel in



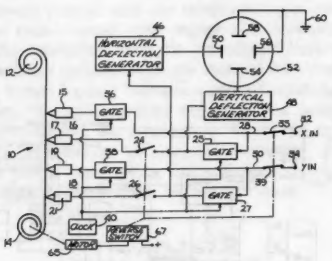
the housing. After evacuation the channel is sealed to maintain reduced pressure in the cavity during operation of the geophone.

3,688,252

NAVIGATIONAL RECORDING AND DISPLAY AID

Donald O. Thompson, 642 Camino Manzanas, Thousand Oaks, Calif.

Filed Sept. 29, 1970, Ser. No. 76,424
Int. Cl. G08c *21/00*
U.S. Cl. 340—24 **3 Claims**



Herein described is a navigational system which includes apparatus for simultaneously displaying discrete navigational coordinate signals and recording these coordinate signals on a moving memory at predetermined time intervals as the vehicle navigates along a path. Thus, the path is permanently recorded for future use. During or at the end of the vehicle's outgoing voyage, the memory is applied to a display device which may include a transparent map overlay. The discrete coordinate signals are then displayed on the display, displaying the navigational discrete coordinates on the display, so that the operator may steer the vessel over an exact return path. Alternatively, the memory may be used with an appropriate autopilot so that the vessel returns to any point or completely traverses in reverse the initial outgoing course.

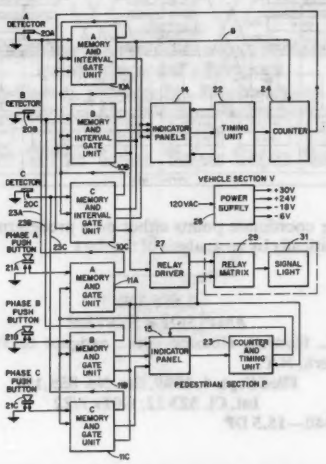
3,688,253

TRAFFIC CONTROL SYSTEM

Philip Cane, Brooklyn, N.Y., assignor to The Marbelite Company, Inc., Brooklyn, N.Y.

Filed May 25, 1970, Ser. No. 40,211
Int. Cl. G08g *1/08*
U.S. Cl. 340—31 R **21 Claims**

The traffic system includes a vehicle and pedestrian section and may be used for complex traffic flow conditions. A three phase traffic controller is disclosed defining phases A, B, and C. Each section of the system is provided with an indicator panel, a binary counter for indicating phase and interval timing, timing circuitry, and relay drive circuitry for actuating traffic signals. Separate gate and memory circuits are also used for each phase. The operation of the system is such that if the system is in any phase such as phase C and there are no calls from the other phases it remains in phase C. If there is a



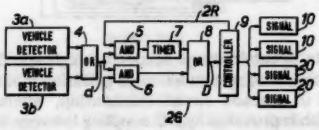
call from another phase and there are no vehicles being detected or prior pedestrian signals being displayed in phase C it moves to that other phase. If phase C is still detecting vehicles or displaying prior pedestrian signals a predetermined time period elapses before the system selects the phase that has called. The system also has the capability of skipping phases that have not called by going from C directly to B skipping A if A has not called.

3,688,254

TRAFFIC SIGNAL CONTROL SYSTEM

Sadayuki Uryu, Osaka, and Hiroshi Ueda, Kyoto, both of Japan, assignors to Omron Tateisi Electronics Co, Kyoto, Japan

Filed Feb. 6, 1970, Ser. No. 9,140
Claims priority, application Japan, Feb. 15, 1969, 44/11365
Int. Cl. G08g *1/07*
U.S. Cl. 340—37 **2 Claims**



A system for controlling the traffic signal lights at an intersection where at least two streets cross, which comprises: a vehicle detector having a predetermined detection zone and provided on one of said streets at each side of said intersection to produce a detection signal in response to the presence of a vehicle within said detection zone; means for receiving said detection signal to produce an actuation signal when said detection signal continues for a predetermined period of time; and control means operable in response to said actuation signal to control said signal lights. The system may further in-

clude means for causing said actuation signal producing means to be operative only when right-of-way is not given to said one street. With no right-of-way being given to said one street, when a vehicle arriving at the intersection from said one street to be stopped and stay in said detection zone for said predetermined period of time, said actuation signal is produced to actuate said control means to control said signal lights so as to give right-of-way to said one street. The system may still further include means for applying said detection signal as an alternative actuation signal to said control means when right-of-way is given to said one street, so that said control means operates to extend the period of said right-of-way for said one street, thereby allowing the vehicle that has caused said detection signal to pass through said intersection.

3,688,255

ELECTRICAL WARNING SYSTEM FOR VEHICULAR BRAKE INSTALLATIONS

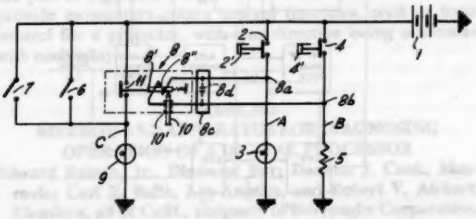
Hans-Christof Klein, Hattersheim, Main; Hans Beller, Bad Vilbel, and Gert Schrader, Schweinfurt, all of Germany, assignors to Alfred Teves Maschinen-und Armaturenfabrik KG, Frankfurt am Main, Germany

Division of Ser. No. 652,760, July 12, 1967, Pat. No. 3,588,810. This application Sept. 2, 1970, Ser. No. 68,849

Claims priority, application Germany, July 21, 1966, T 31 640; July 27, 1916, T 31 689; Aug. 6, 1916, T 31 790; Aug. 6, 1966, T 31 789; Sept. 1, 1966, T 31 962; Dec. 7, 1966, T 32 694

Int. Cl. G08b *21/00*

U.S. Cl. 340—52 C **8 Claims**



Brake system having a pair of fluid-operated brake networks including substantially concurrently actuable master-cylinder chambers and respective sets of wheel brakes communicating therewith, an ignition battery, a brake or tail lamp energizable by the battery upon operation of the brake pedal, and a pair of fluid-responsive switches each operatively connected with a respective one of said networks for operating an electrical warning lamp on the dashboard effective upon failure of hydraulic pressure in one of the networks for indicating such failure.

3,688,256

VEHICLE INTRUSION ALARM SYSTEM

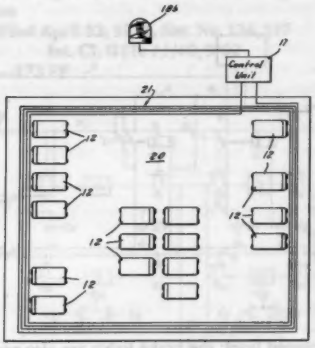
Robert F. D'Ausilio, La Mirada, and Robert E. Updegraff, Huntington Beach, both of Calif., assignors to Threshold Engineering, Inc., Fullerton, Calif.

Filed April 28, 1971, Ser. No. 138,221

Int. Cl. B60r *25/10*

U.S. Cl. 340—63 **19 Claims**

A vehicle intrusion alarm system protects against the pilferage of vehicles, such as trucks, that remain overnight or longer on parking lot. The system is based on the cooperation between a receiver in the parking lot and a transmitter in the vehicle, said transmitter adapted to be activated by the mere act of opening a vehicle door. As soon as an intruder opens such a door, this action causes the transmitter to produce a



changing magnetic field; and a pickup wire of the receiver produces a signal voltage that is used to produce an alarm.

3,688,257

AUTOMOBILE ANTI-THEFT DEVICE

Thomas A. Mann, 1420 Amsterdam Ave., New York, N.Y.

Filed April 12, 1971, Ser. No. 133,243

Int. Cl. B60r *25/00*; G08b *15/00*

U.S. Cl. 340—64 **4 Claims**

Apparatus in an automobile, rendered responsive when the engine is started without the use of the ignition key and the automobile is driven off actuates means for letting the air out of both rear tires whereby the automobile cannot be driven at any speed for any distance until the tires are reinflated.

3,688,258

INSTALLATION FOR THE INDICATION OF A FULL BRAKING AND OF THE STOPPAGE IN A MOTOR VEHICLE

Egon Frey, Stuttgart-Degerloch, Germany, assignor to Daimler-Benz Aktiengesellschaft, Stuttgart-Unterturkheim, Germany

Filed Nov. 7, 1969, Ser. No. 874,880

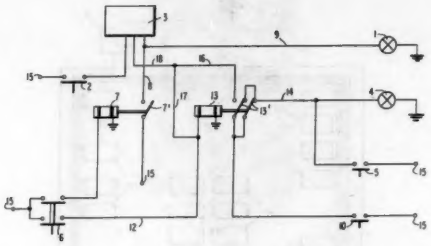
Claims priority, application Germany, Nov., 1968, P 18 07 754.8

Int. Cl. B60q *1/38*

U.S. Cl. 340—67 **10 Claims**

A system for indicating the full braking and the stoppage of a motor vehicle in which the turn-indicator lights, normally

adapted to be intermittently energized by the turn indicator, are continuously energized when the brake pressure reaches a predetermined level; the brake lights are also energized if the vehicle comes to a standstill regardless of the condition of the brake pedal.

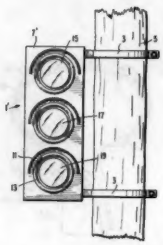


3,688,259

TRAFFIC SIGNALS HAVING ANNULAR COLORED ILLUMINATED TUBE AROUND EACH SIGNAL LENS

Marcel Rebillt, 167, Avenue Felix-Faure, Lyon 3E, France

Filed Feb. 23, 1971, Ser. No. 118,132
Claims priority, application France, Feb. 25, 1970, 7006682
Int. Cl. B60q *1/00*
U.S. Cl. 340—112 R **2 Claims**



A traffic light has superposed red, yellow and green lenses, each of which is surrounded by an annular illuminated tube that glows in a color that contrasts with the color of the lens, e.g., white.

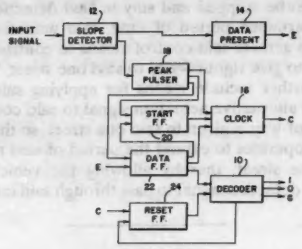
3,688,260

SELF-CLOCKING DIGITAL DATA SYSTEMS EMPLOYING DATA-COMPARISON CODES AND ERROR DETECTION

Alan K. Jensen, Saratoga, and Richard L. Desilets, Mountain View, both of Calif., assignors to Transaction Systems, Incorporated, Palo Alto, Calif.

Filed Sept. 23, 1970, Ser. No. 74,672
Int. Cl. G08c *25/00*
U.S. Cl. 340—146.1 R **37 Claims**

Coded information, which may be stored in storage media, is decoded and reproduced. The retrieval system may be self-clocking, with decoding being accomplished by comparing pairs of data events or conditions. Messages may be composed of three types of bits, one of which is a special type which permits checking the quality of message reproduction. The special type of bit is designated when the result of an event comparison is within a controlled range of uncertainty. Novel decoding and slope detecting circuits are disclosed.

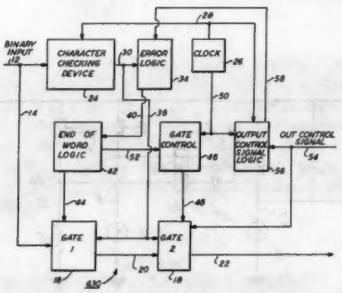


3,688,261

LOGIC PROCESSING SYSTEM

John Franklin Henderson, Kearny, N.J., assignor to Litton Business Systems, Inc., New York, N.Y.

Filed Oct. 5, 1970, Ser. No. 77,892
Int. Cl. G08c *25/00*
U.S. Cl. 340—146.1 AB **18 Claims**



A logic processing system as disclosed comprising a character checking device which indicates whether the incoming parallel binary coded character has a predetermined number of binary 1s. If the predetermined number of ones is received a plurality of gates passes the signal on to a receiving device. If, on the other hand, the character received does not possess the predetermined number of binary 1s, the character checking device provides a signal under control of a clock to said gates for replacing the "bad" character with a predetermined bad — character — code and, in addition, at the end of a word comprising a plurality of such characters inserts, through end of word logic, an end of word character through a first of the plurality of gates. The code signifies whether the word passed through the receiving device possess all good characters or one or more bad characters.

3,688,262

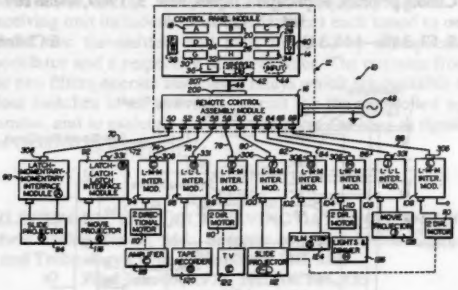
MODULAR AUDIO-VISUAL CONTROL SYSTEM

Stephen A. Liquori, 414 N. Midland Ave., Apt. Y1, Saddlebrook, N.J.

Filed Aug. 27, 1970, Ser. No. 67,551
U.S. Cl. 340—147 R **22 Claims**

A modular control system which is adaptable to be controlled either manually or by a tone generator such as a touch-tone telephone or a prerecorded tape, includes a modular selection means which selectively provides one of a plurality of particular audio-visual device control paths from one of a plurality of operational mode control paths which are com-

mon to a plurality of audio-visual devices, and a momentary device control path which is particular to one of the devices. The modular selection means includes means for selectively providing a momentary device control path from a plurality of such paths, with a different one of such paths being associated with a different one of the devices. An audio-visual device control interface module is removably connected between the modular selection means and each of the devices to be controlled. The interface module provides a portion of the plurality of audio-visual device control functions, such as three, for



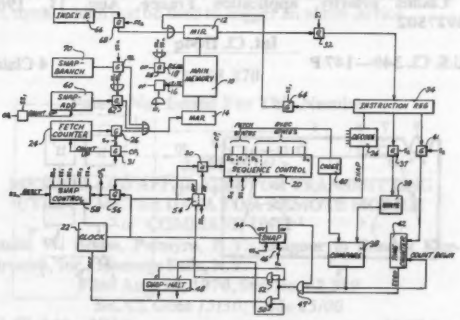
the device connected thereto, a different one of such functions being provided for a different one of the audio-visual device control paths. The interface module includes either a latch relay and a pair of momentary relays connected in parallel, or three latch relays connected in parallel depending on the functions desired. A bidirectional motor is connected to the pair of momentary relays of such an interface module to provide momentary rotary control functions, such as focus control for a projector, with one direction being associated with each relay.

3,688,263

METHOD AND APPARATUS FOR DIAGNOSING OPERATION OF A DIGITAL PROCESSOR

Edward Balogh, Jr., Diamond Bar; Daewen J. Cook, Monrovia; Carl E. Bube, Los Angeles, and Robert V. Airhart, Glendora, all of Calif., assignors to Burroughs Corporation, Detroit, Mich.

Filed April 19, 1971, Ser. No. 135,333
Int. Cl. G06f *11/04*; G05b *23/02*
U.S. Cl. 340—172.5 **5 Claims**



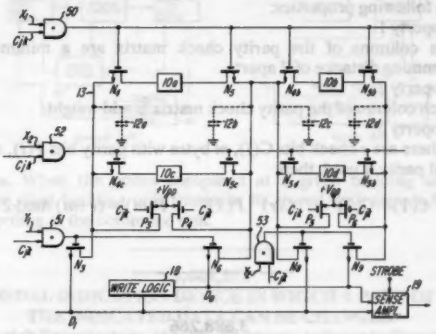
There is described a digital processor which, in response to a unique instruction, may be interrupted at any point in the fetch or execution of the next instruction and the contents of all the control flip-flops and registers can then be stored in a predetermined location in memory, following which the processor branches to a diagnostic routine.

3,688,264

OPERATION OF FIELD-EFFECT TRANSISTOR CIRCUITS HAVING SUBSTANTIAL DISTRIBUTED CAPACITANCE

Andrew G. F. Dingwall, Somerville, N.Y., assignor to RCA Corporation

Filed April 22, 1971, Ser. No. 136,327
Int. Cl. G11c *11/40, 5/02*
U.S. Cl. 340—173 FF **4 Claims**



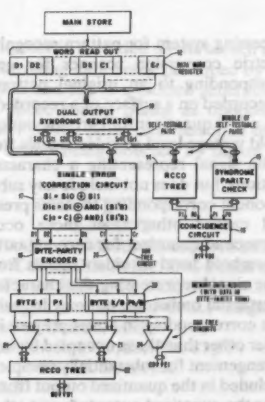
The distributed capacitance at circuit node between conduction paths of interconnected field-effect transistors of a memory array is maintained charged to a fixed value during the major portion of the memory operating time. As one example, the distributed capacitance at the columns of an integrated circuit of a memory chip may be connected to the charging source except for the times during which any location on that chip is being accessed. Operation in this way opens sneak paths in the circuit and reduces power dissipation.

3,688,265

ERROR-FREE DECODING FOR FAILURE-TOLERANT MEMORIES

William C. Carter, Ridgefield, Conn.; Robert A. Henle, Port Chester, N.Y.; Donald C. Jessep, Jr., Pound Ridge, N.Y., and Aspi B. Wadia, Chappaqua, N.Y., assignors to International Business Machines Corporation, Armonk, N.Y.

Filed March 18, 1971, Ser. No. 125,652
Int. Cl. G08c *25/00*; G06f *11/00*
U.S. Cl. 340—146.1 AL **7 Claims**



A translator for a digital memory system which performs single error correction and double error detection

(SEC/DED) upon the stored word in converting it into a parity-encoded form and in addition detects circuit failures in the translator itself. The translator also takes a parity-encoded word, checks the parity encoding, translates the word into an SEC/DED form and writes it into memory. The translator consists of a syndrome generator, a single error corrector, a double error detector, a byte parity encoder, a byte parity checker and a circuit to implement a check on the parity-encoded form of the word which is read. The parity-check matrix used in formulating the SEC/DED encoded form of the word has the following properties:

Property 1:

The columns of the parity check matrix are a minimum Hamming distance of 2 apart.

Property 2:

Each column of the parity check matrix is odd weight.

Property 3:

If there are r check bits $C(j)$, m bytes with parity bits $P(i)$, and odd parity is used, then

$$C(1)\ \ C(2)\ \ \ldots\ \ C(r)\ \ P(1)\ \ \ldots\ \ P(m)=(r+m) \bmod 2$$

3,688,266

PREPROCESSING SYSTEM FOR PATTERN RECOGNITION

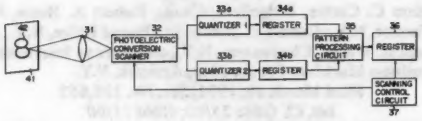
Sadakazu Watanabe, Tokyo; Kenichi Mori, Yokohama; Tsuneo Yoneyama, Kawasaki, and Hiroshi Genchi, Tokyo, all of Japan, assignors to Tokyo Shibaura Electric Co., Ltd., Kawasaki-shi, Japan

Filed March 30, 1970, Ser. No. 23,944

Claims priority, application Japan, March 31, 1969, 44/24171

Int. Cl. G06k 9/12

U.S. Cl. 340—146.3 MA **2 Claims**



A preprocessing system for pattern recognition comprising a photoelectric conversion scanner for generating video signals corresponding to an original pattern consisting of characters recorded on a surface of a recorded carrier so as to be read out, a first quantizer for carrying out quantization at a first threshold voltage level of video signals from said scanner such that the signal representing a character may contain omitted portions, but does not include any substantial readout signal component corresponding to stains present in spaces of said record carrier other than those occupied by said character, a second quantizer for carrying out quantization at a second threshold level of video signals from said scanner such that the signal representing the character does not contain any substantial omissions, but may include readout signal components corresponding to stains present in spaces of said record carrier other than those occupied by said character and a circuit arrangement for substantially completing the omitted portions included in the quantized output from said first quantizer utilizing the quantized outputs from both first and second quantizers and substantially eliminating information corresponding to stains present in the other blank spaces of said record carrier than those occupied by said character.

3,688,267

PATTERN IDENTIFICATION SYSTEMS OPERATING BY THE MULTIPLE SIMILARITY METHOD

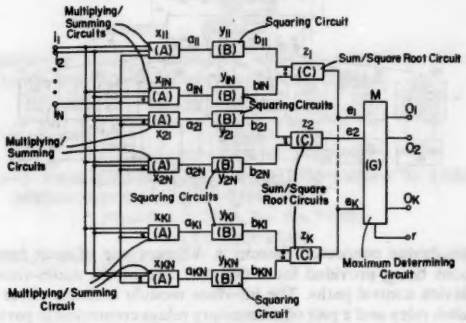
Taizo Iijima, Tokyo-to, and Kenichi Mori, Kawasaki, both of Japan, assignors to Kogyo Gijutsuin, a.k.a. "Agency of Industrial Science and Technology, Ministry of International Trade and Industry, Japanese Government,", Tokyo-to and Tokyo Shibaura Denki Kabushiki Kaisha, a.k.a. Tokyo Shibaura Electric Co., Ltd., Kawasaki-shi, Japan, part interest to each

Filed Nov. 2, 1970, Ser. No. 85,916

Claims priority, application Japan, Nov. 5, 1969, 44/88109

Int. Cl. G06k 9/08

U.S. Cl. 340—146.3 Q **6 Claims**



Pattern identification systems wherein N number of different "standard patterns" are prepared for each "reference pattern," and whether a given input pattern belongs to the category of the reference pattern or not is determined according to whether a value of the sum of the squares of N number of different similarities of the input pattern to the standard patterns, or a value of the square root thereof, exceeds or falls short of a predetermined maximum.

3,688,268

ELECTRONIC REMOTE CONTROL DEVICE UTILIZING MODULATED TRANSMISSION OF MAGNETICALLY RECORDED SIGNALS FILTERED IN A RECEIVER

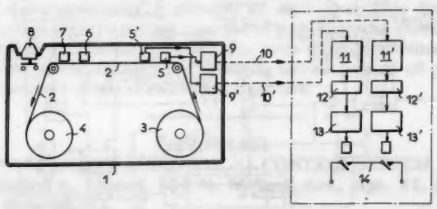
Claude A. Bedjai, 3, rue du Plessis Piquet, 92 Clamart, and Pierre N. Antoine, Residence des Trois Forets, 78 Bougival, both of France

Filed Aug. 10, 1970, Ser. No. 62,443

Claims priority, application France, Aug. 11, 1969, 6927502

Int. Cl. H04q

U.S. Cl. 340—147 P **4 Claims**



The device is operable to activate, and maintain activated for a predetermined time period, a consumer-controlled apparatus, such as a goods dispensing apparatus. The device includes a self-contained signalling unit in the form of a lightweight, easily portable, cassette type magnetic tape reproducing unit in which a tape is wound from a supply reel to a take-up reel responsive to actuation of a start button. A

series of coded signals are recorded along a predetermined length of the tape and correspond to programmed information, and the tape may have two tracks. A respective pick-up or reading head is associated with each track and is connected to a respective radio signal transmitter. After the tape passes the reading heads, it passes beneath an erase head and a filter head which, respectively, erase the recorded information and erase all random noises and spurious signals. The radio signal transmitters are high frequency transmitters which are crystal controlled as to their respective frequencies, and the information from the reading heads is supplied as low frequency modulations to the transmitted high frequency signals. A receiving unit includes respective receivers each tuned to one of the two transmitters and each followed by a respective modulator and a respective selective filter. The currents from the two filters operate associated relays which are operable to close switches in an activating circuit for the controlled apparatus, and to maintain the switches closed as long as signals are received by the receiver.

3,688,269

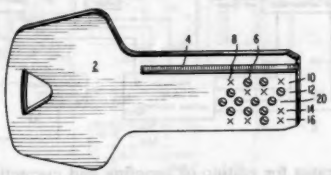
ELECTRONIC KEY LOCK HAVING DATA CODED KEY

Edwin Miller, Bowie, Md., assignor to Constellation Science and Technology Corporation, Oxon Hill, Md.

Filed Jan. 15, 1971, Ser. No. 106,835

Int. Cl. H04q *3/00*

U.S. Cl. 340—149 R **10 Claims**



An electronic key lock apparatus comprising a digitally coded key which is inserted into a lock apparatus. Upon insertion, the digital code on the key is read and compared with a predetermined digital code. If the code on the key matches the predetermined code, then an output is produced which, through a logic circuit, causes an output signal which will unlock the lock apparatus. If the code on the key does not match the predetermined code, then an unlock output will not be produced, and furthermore, the logic circuit will produce a reject signal which can be used to trigger an alarm device.

3,688,270

Patent Not Issued For This Number

3,688,271

METHOD AND APPARATUS FOR TRANSMITTING UTILITY METER DATA TO A REMOTE MOBILE COMMAND UNIT

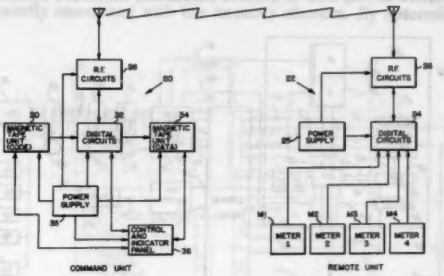
Donald W. Rouse, Palmyra, N.Y., assignor to Readex Electronics, Inc., Honeoye Falls, N.Y.

Filed Aug. 10, 1970, Ser. No. 62,319

Int. Cl. G06f *15/30*; G08c *25/00*

U.S. Cl. 340—172.5 **16 Claims**

The readings recorded by the utility meters in a household or other building are continuously converted and stored in a unit in the building in the form of transmittable binary data signals. The units in different buildings have a different binary identifying code. A mobile command station intermittently transmits to all building units in its command different codes, only one of which corresponds to the identifying code of a given building unit. Each transmitted code is compared simultaneously at each building unit with the latter's identifying



code. When the codes compared at a given building unit agree, that building unit transmits its stored data signals for recording at the command unit.

3,688,272

VISUAL INDICATION DEVICE IN WHICH A PART OF THE INDICATED DATA CAN BE CHANGED

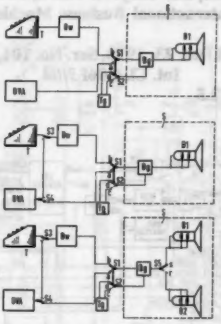
Heinrich Baumgartner, Munich, Germany, assignor to Siemens Aktiengesellschaft, Berlin and Munich, Germany

Filed Sept. 3, 1970, Ser. No. 69,307

Claims priority, application Germany, Sept. 8, 1969, P 19 45 412.7

Int. Cl. G06k *15/20*; G06f *3/14*

U.S. Cl. 340—172.5 **5 Claims**



Images are temporarily recorded on the screen of a cathode ray tube, the controlling data being produced by a keyboard type data generator and fed to a picture generator under the control of high speed timing pulses as opposed to image storage at a slower timing pulse rate, selection of storage or temporary recordation being effected by means of transfer switches.

3,688,273

DIGITAL DATA COMMUNICATION SYSTEM PROVIDING A RECIRCULATING POLL OF A PLURALITY OF REMOTE TERMINAL UNITS

Chander K. Narang, Sierra Madre, Calif., assignor to Burroughs Corporation, Detroit, Mich.

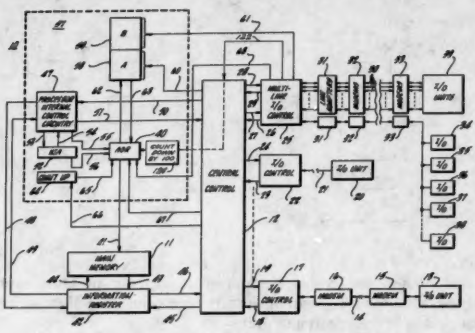
Filed Nov. 9, 1970, Ser. No. 87,914

Int. Cl. G06f *3/00*

U.S. Cl. 340—172.5 **10 Claims**

A digital data transmission system in which a string of polling messages stored in the memory of a computer system are transmitted over a communication line to a remote station having a plurality of input-output units. An input-output con-

trol unit, without interrupting the processor of the computer system, continuously transmits the polling messages to the remote station to poll the input-output units. A counter is counted in response to control characters which are stored as



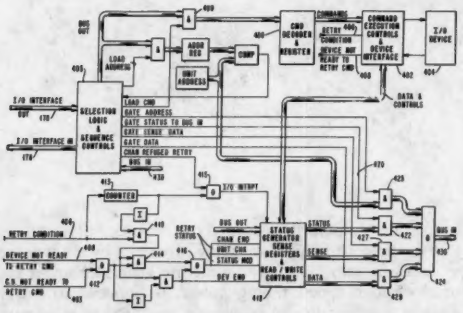
part of the polling string and divide the string into equal blocks. The counter controls logic for resetting the memory address back to the base address of the polling string when the entire string has been transmitted, so that the string is repeated without intervention of the processor.

3,688,274

COMMAND RETRY CONTROL BY PERIPHERAL DEVICES

Roger L. Cormier, Wappingers Falls, N.Y.; John H. Sorg, Jr., Los Gatos, Calif., and Caryl A. Thorn, Poughkeepsie, N.Y., assignors to International Business Machines Corporation, Armonk, N.Y.

Filed Dec. 23, 1970, Ser. No. 101,079
Int. Cl. G06f *3/04*
U.S. Cl. 340—172.5 **8 Claims**



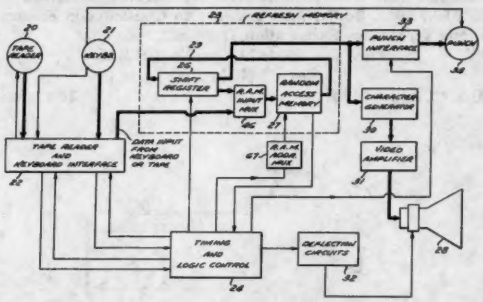
An input/output subsystem in which a peripheral device controller controls the device in response to commands received from an input/output (I/O) channel. A sequence of channel command words (CCWs) are stored in sequential addresses in a main memory. Some CCWs contain commands, other CCWs contain memory addresses for data but no commands. An initial instruction to the channel gives the channel the address where the first CCW is stored in the memory. The location address of the last CCW in the sequence containing a command is retained in a back-up register in the channel. Further CCWs are chained to the CCW containing the command to provide scattered addresses the the memory for the storage of blocks of data. At the completion of the data transfer operation associated with a CCW, the location address of the CCW is incremented by one address to thereby specify the next sequential address and hence, the next CCW. The next CCW contains an address at which further data are to be stored. The occurrence of a signal from the I/O device indicating an error or a non-error condition, either of which conditions require the retrying of the original command, causes the channel to utilize the retained address to fetch the control work containing the command. This provides a way of backing up in the channel program without interrupting the computer to retry the original initializing command even though intervening control words were executed.

3,688,275

FULL WORD WRAP-AROUND IN EDITING/CORRECTING DISPLAY APPARATUS

Walter G. Fredrickson, Indialantic; George M. Jones, Indian Harbour Beach, and Howard A. Thrailkill, Indialantic, all of Fla., assignors to Harris-Intertype Corporation, Cleveland, Ohio

Filed May 14, 1970, Ser. No. 37,191
Int. Cl. G06f *3/14*
U.S. Cl. 340—172.5 **18 Claims**



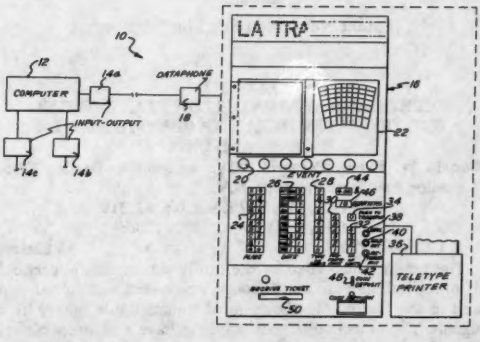
Apparatus for editing or proofing and correcting text displayed on the screen of a cathode ray tube. Whenever a word runs beyond the end of the line, it is automatically transferred down to the beginning of the next line for the next refresh cycle of the cathode ray tube by the present control circuitry.

3,688,276

COMPUTER CONTROLLED VENDING SYSTEM

Jack C. Quinn, New York, N.Y., assignor to Ticket Reservation Systems, Inc., New York, N.Y.

Continuation of Ser. No. 679,835, Nov. 1, 1967, abandoned. This application July 13, 1970, Ser. No. 56,214
Int. Cl. G06f *11/70, 3/12*
U.S. Cl. 340—172.5 **6 Claims**



A central computer controls remote vending machines through long distance communication lines wherein the vend-

ing machine, in response to instructions from the computer, prints and issues valuable documents such as entertainment tickets, lottery tickets, race tickets and the like. The computer acts as a memory storage for keeping inventory and accounts. In a second embodiment an attendant sales terminal may be used with a split platen printer wherein a single mechanism provides two sets of information, the first set being the answer to inquiries and the second set the desired output.

3,688,277

Patent Not Issued For This Number

3,688,278

DATA PROCESSING APPARATUS

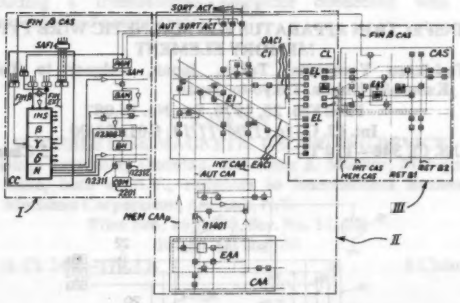
Jacques Louis Sauvan, 43 rue Lacepede, Paris, and Jacques Berthelemy, 8 rue de la Gare, 77 Thorigny, both of France

Filed Sept. 19, 1969, Ser. No. 860,849

Claims priority, application France, Sept. 19, 1968, 166844

Int. Cl. G06f *15/34*

U.S. Cl. 340—172.5 **27 Claims**



Data processing apparatus arranged to perform a method for the search, simultaneously in several networks, for a set of optimum component trajectories respecting constraints of inter-dependence of these networks, these trajectories connecting in each network a starting point node and a target point node ; this method is carried out by performing a series of retrograde investigations from a final situation to an initial situation and thus determining step by step the desired set of optimum component trajectories ; the apparatus may include : centers for simulating each network, centers of association of nodes or links of different networks for simulating the inter-dependence constraints of the networks, posting members for target and starting points nodes, a center of coordination for coordinating the transmission of signals to a number of lines which connect said different centers with the aid of temporary memories.

3,688,279

DATA STORAGE SYSTEM

Wolfgang Hilberg, Thalfingen, Germany, assignor to Licentia Patent-Vermaltungs G.m.b.H., Frankfurt am Main, Germany

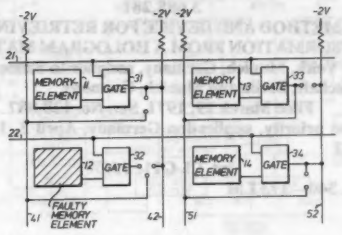
Filed Nov. 2, 1970, Ser. No. 85,984

Claims priority, application Germany, Oct. 31, 1969, P 69 42 346.7

Int. Cl. G11c *5/02*, *17/00*

U.S. Cl. 340—173 SP **7 Claims**

A memory arrangement, including a plurality of memory elements which are capable of emitting output signals of different potentials in accordance with the stored information, which can be simultaneously utilized both as a permanent or read-only memory and as an operational or read-write memory. A pair of read-lines is associated with each memory element or column of memory elements. Each memory element is connected to only one of the two read-lines, which are biased with a rest potential different from those emitted by the memory elements, in accordance with the information permanently associated with the memory element. By determining which one of the pair of read-lines is not at the rest potential and the particular value of the potential of such read-line when the memory element is interrogated, both the permanently stored information and the temporarily stored information may simultaneously be read.



3,688,280

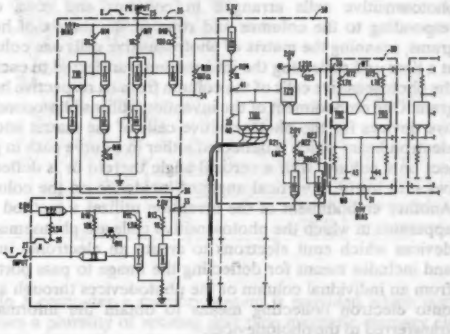
MONOLITHIC MEMORY SYSTEM WITH BI-LEVEL POWERING FOR REDUCED POWER CONSUMPTION

John K. Ayling, Fishkill, and Richard D. Moore, Hopewell Junction, both of N.Y., assignors to International Business Machines Corporation, Armonk, N.Y.

Filed Sept. 22, 1970, Ser. No. 74,432

Int. Cl. G11c *7/00*, *11/40*, *5/02*

U.S. Cl. 340—173 FF **12 Claims**



A monolithic integrated semiconductor circuit in which both the memory array proper and the addressing and decoding support circuitry are subjected to two power levels, i.e. a low power level when the memory array is in the non-selected or inactive state and a higher level of power necessary to render the decode and address circuitry operational and to make the lines of the array selected by said support circuitry operational for reading and writing into the memory.

In order that the time required for the selection of a given line in the memory array, either a row or a column, be held to a minimum, decoding means provide an output which applies to all of the gates associated with each of the rows and/or columns, the preselected patterns required to activate a row or column during the low power or inactive state. Then, during the active state when higher power is applied, the decode circuitry functions to remove the preselected signal necessary to activate a row or column from all of the gates except the gate associated with the column or row to be activated. By functioning in this manner, the circuitry of the present invention avoids a time lag when the higher level is applied which would otherwise be necessary in order to bring the preselected

input signal applied to the selected gate up to the level necessary to activate the selected column or row.

3,688,281

METHOD AND DEVICE FOR RETRIEVING INFORMATION FROM A HOLOGRAM MATRIX

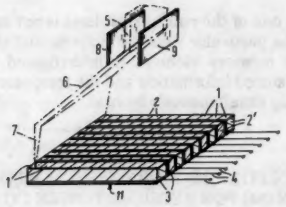
Werner Veith, Munich, Germany, assignor to Siemens Aktiengesellschaft, Berlin and Munich, Germany

Filed March 29, 1971, Ser. No. 128,887

Claims priority, application Germany, April 3, 1970, P 20 16 114.2

Int. Cl. G11c *13/04*

U.S. Cl. 340—173 LM **12 Claims**



A method and device for retrieving information from a matrix of holograms arranged in columns and rows characterized by illuminating the matrix of holograms with a laser illumination and focusing the hologram images on a matrix of photosensitive cells arranged in columns and rows corresponding to the columns and rows of the matrix of holograms, scanning the matrix of photosensitive cells one column at a time and collecting the information transferred to each of the photosensitive cells of the column from its respective hologram. One embodiment of the invention utilizes photoconductive devices for the photosensitive cells of the matrix and an electron beam which is deflected either in a curve path to project on a column with a vertical angle thereto or is deflected twice to insure a vertical angle of incidence on the column. Another embodiment of the invention utilizes a method and apparatus in which the photosensitive cells are photoemissive devices which emit electrons to create an electronic image and includes means for deflecting the image to pass portions from an individual column of the photodevices through a slot onto electron collecting means to obtain the information transferred to the photodevices.

3,688,282

MAGNETO-OPTICAL MAGNETIC FIELD POLARITY SENSOR

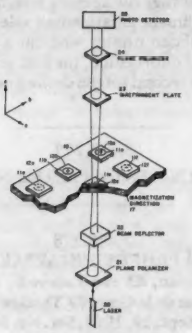
Carl F. Buhrer, Oyster Bay, N.Y., assignor to General Telephone & Electronics Laboratories Incorporated

Filed Oct. 16, 1970, Ser. No. 81,387

Int. Cl. G11c *11/14, 11/42*

U.S. Cl. 340—174 TF **8 Claims**

Apparatus for sensing the polarity of a low strength magnetic field located within a region having small spatial dimensions. A transparent magnetically uncompensated transducer consisting of a bismuth-containing iron garnet is placed within the magnetic field. The transducer is characterized by a large Faraday effect, low coercive force and a demagnetizing field which is small in comparison with the magnetic field being sensed. The axis of polarization of a linearly polarized beam of light transmitted through the transducer is rotated as a result of interaction with the magnetic field in a direction determined by the polarity of the field. Means are provided for



determining the direction of rotation of the axis of polarization thereby sensing the polarity of the magnetic field.

3,688,283

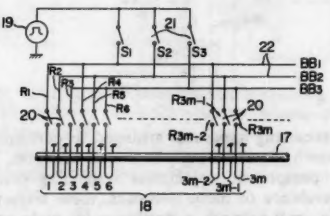
INSPECTION APPARATUS FOR MAGNETIC WIRE TYPE MEMORY ELEMENT

Toshikazu Yoneyama, Tokyo, Japan, assignor to Toko Kabushiki Kaisha, Tokyo-to, Japan

Filed Feb. 25, 1970, Ser. No. 14,087

Int. Cl. G11c *11/04, 11/14*; G01r *33/00*

U.S. Cl. 340—174 TC **5 Claims**



Apparatus for inspecting memory points of a magnetic wire type memory element, in which combination of a mechanical switch device and a semiconductor switch device is utilized as a memory point inspecting switch device, whereby a high speed inspection and a simple construction of the apparatus are made possible.

Furthermore, a particular modification of the invention comprises an additional switch connected to close an electric circuit necessary for inspecting succeeding memory points, whereby a continuous inspection of successive memory points is made possible.

3,688,284

TRANSISTOR RECORDING CIRCUIT WITH COMMUTATOR

Pierre Jorgensen, A L'Hay-les-Roses, France, assignor to Saint-Gobain Techniques Nouvelles, Courbevoie, Seine, France

Division of Ser. No. 624,877, March 21, 1967, Pat. No. 3,544,780. This application Jan. 7, 1970, Ser. No. 6,005

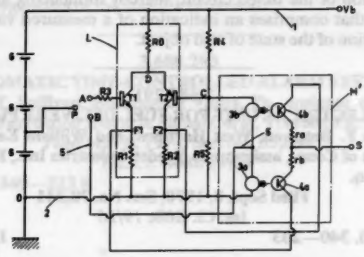
Claims priority, application France, March 21, 1966, 6698430

Int. Cl. G11b *5/02*

U.S. Cl. 340—174.1 H **5 Claims**

An electronic multiplier for producing an algebraic product comprising means for selectively recording a series of positive dipoles and negative dipoles with blank zones on a mobile information memory track and a corresponding series of either

positive or negative dipoles on a mobile reference memory track and means for simultaneously reading and converting to electrical signals successive dipoles (or zones) on the information track and successive dipoles on the reference track and



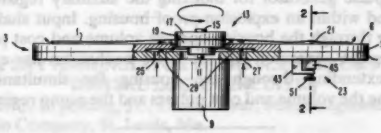
for effecting the product of said signals, wherein the recording on the information memory track is effected by apparatus including a transistorized comparer connected with a transistorized commutator.

3,688,285

FLEXIBLE DISK MAGNETIC RECORDING DEVICE

George Lawrence, Ossining, and Hans J. Mueller, Mohegan Lake, both of N.Y., assignors to International Business Machines Corporation, Armonk, N.Y.

Filed Feb. 16, 1970, Ser. No. 11,498
Int. Cl. G11b *5/60*
U.S. Cl. 340—174.1 E **5 Claims**



A flexible magnetic storage disk is stably rotated over a backer plate on a thin film of air entering between disk and plate, at a point interior with respect to the disk periphery, to thereby form the disk into a surface of revolution. A read-write transducer head protrudes into the surface of revolution to provide microinch separation between disk and head.

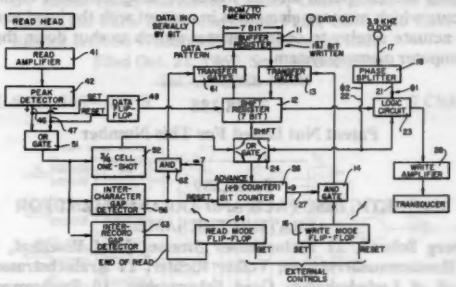
3,688,286

DIGITAL DATA RECORDING AND REPRODUCING SYSTEM

William C. Bennett, Menlo Park; David C. Condon, Monte Sereno, and Rodney O. Brink, Los Altos, all of Calif., assignors to Novar Corporation, Mountain View, Calif.

Filed April 6, 1970, Ser. No. 25,651
Int. Cl. G11b *5/00*
U.S. Cl. 340—174.1 G **7 Claims**

A digital data recording system for recording digital information on a recording medium with each record separated by an inter-record gap and the characters within each record separated by an inter-character gap and a reproducing system for reproducing the data which includes an inter-character detector which detects the inter-character gap and destroys the recovered character if at the time of occurrence of such gap



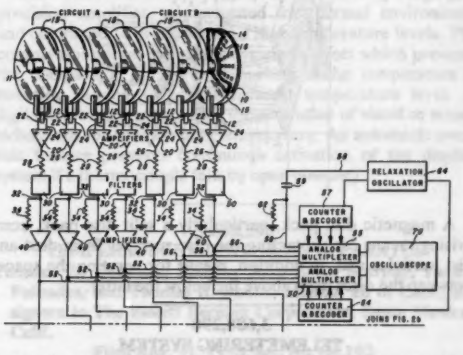
the complete character has not been reproduced and the inter-record gap detector which stops reproduction at the completion of each record.

3,688,287

COMPUTER MEMORY SYSTEM

Ralph S. Perry, Richardson, Tex., assignor to Texas Instruments Incorporated, Dallas, Tex.

Filed Aug. 24, 1970, Ser. No. 66,298
Int. Cl. G08b *21/00*; G11b *5/60, 19/08*
U.S. Cl. 340—174.1 E **16 Claims**



In a computer a memory system is provided which comprises a plurality of rotating disc type magnetic memory elements mounted upon a motor driven shaft. The magnetic discs are designed to store information in the form of magnetic bits on two sides. Faulty areas are located on the discs and bypassed by switching to another disc on a sector basis to ensure computer reliability. The disc memory elements receive information from a plurality of read-write heads which during normal operation are in flying association with the discs. For each memory disc, there is a yoke assembly which includes a plurality of read-write heads spring connected to a yoke which is supported over each magnetic memory disc. The computer memory system includes an ultrasonic collision detector to detect during operation damaging hits or collisions between a memory disc and an aerodynamically unstable head. For disc-head collision detection, a piezoelectric ceramic element is attached to each disc yoke to detect vibrations and, in particular, those occurring when any element of a head comes in contact with a memory disc. The vibrating frequencies of the piezoelectric ceramics are converted to electrical signals, amplified and passed through Tschebyscheff filters to eliminate normal operating frequencies detected by the ceramics and to pass memory element damaging frequencies to a second amplifier. The second amplifier has two outputs — one output to

an analog multiplexer to provide on an oscilloscope a look at each memory disc operating to determine the nature of the collision, and a second output to a detector where the signal inputs are compared and an indicator lamp actuated to indicate which memory element is in contact with the head and to actuate a relay to open a master switch to shut down the computer memory system.

3,688,288

Patent Not Issued For This Number

3,688,289

MAGNETIC DISC PACK AND ARRANGEMENT FOR AERATING THE SAME

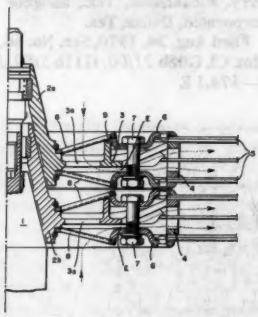
Georg Schnell, 21 Freinsheimer Strasse; Josef Woellhaf, 1 Huettenmuellerstrasse; Volker Richter, 11 Krainchstrasse, all of Ludwigshafen; Gerd Schumacher, 18 Fuellenweg, 6800 Manheim, and Erich Albert Sobotta, 17 Am Baechenbuckel, Ziegelhausen, all of Germany

Filed May 10, 1971, Ser. No. 141,628

Claims priority, application Germany, May 13, 1970, P 20 23 236.4

Int. Cl. G11b *5/82*

U.S. Cl. 340—174.1 E **4 Claims**



A magnetic disc pack, particularly a split disc pack, comprising means for protecting the disc surfaces from dust and dirt particles and, in addition, means for aerating the spaces between the discs from above the below the latter.

3,688,290

TELEMETERING SYSTEM

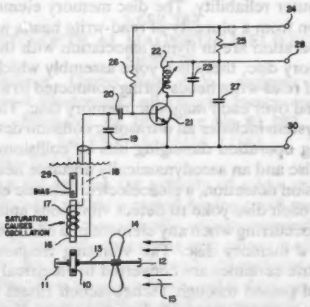
Palle-Finn Beer, Lidingo, Sweden, assignor to AGA Aktiebolag, Lidingo, Sweden

Filed March 19, 1971, Ser. No. 126,060

Claims priority, application Sweden, March 24, 1970, 3980

Int. Cl. G08c *19/26*

U.S. Cl. 340—195 **3 Claims**



A telemetering system for providing indications of various states of an object, such as its position, motion or rate of rotation. A core of soft magnetic material comprising the inductance of a high frequency tuned circuit is influenced by the magnetic field of a permanent magnet that is affixed to said object and that moves towards and away from the core, respectively, with the magnetic field generated by said permanent magnet premagnetizing said core so as to affect the attenuation of the tuned circuit, thereby influencing an output signal that comprises an indication of a measured value, i.e., indication of the state of said object.

3,688,291

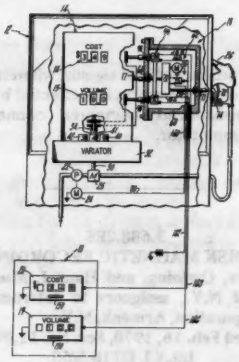
ELECTRICAL UNIT FOR FUEL DELIVERY PUMP

Coates F. Bateman, West Hartford, and William Kes, Avon, both of Conn., assignors to Veeder Industries Inc., Hartford, Conn.

Filed Sept. 8, 1970, Ser. No. 70,341

Int. Cl. G08c *19/16*

U.S. Cl. 340—203 **12 Claims**



A gasoline delivery system with pump and auxiliary registers for registering the volume and cost of each gasoline delivery. An electrical reset mechanism for resetting the pump register and a pulse generator for indexing the auxiliary register are mounted within an explosion-proof housing. Input shafts extending through the housing operate volume and cost pulsers of the pulse generator and the reset mechanism has a drive shaft extending through the housing for simultaneously resetting the volume and cost pulsers and the pump register.

3,688,292

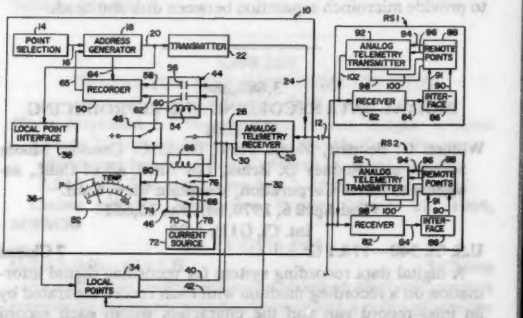
ANALOG TELEMETRY SYSTEM HAVING FREQUENCY SIGNAL TRANSMISSION

Hugh V. Snively, Richmond, Va., assignor to Robertshaw Controls Company, Richmond, Va.

Filed Feb. 16, 1970, Ser. No. 11,761

Int. Cl. G01k *5/00, 5/18*

U.S. Cl. 340—207 R **3 Claims**



An analog telemetry system including a plurality of analog encoders at a plurality of remote stations for sensing a plurali-

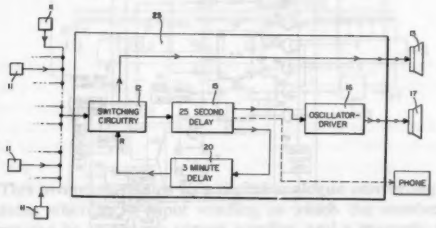
ty of different conditions and providing analog signals corresponding thereto with matching electrical characteristics. Each of the remote stations has a transmitter for transmitting the analog signals to a central control station which includes an indicating meter having a temperature scale and a graduated 0–100 scale for visually representing all of the analog signals regardless of the conditions sensed.

3,688,293

AUTOMATIC TIME-CONTROLLED ALARM SYSTEM

Joseph T. Sullivan, Huntingdon Valley, Pa., assignor to Standard-Farrington Alarm & Signal Corp., Trevose, Pa.

Filed May 8, 1970, Ser. No. 35,684
Int. Cl. G08b *29/00*
U.S. Cl. 340—213 R **7 Claims**



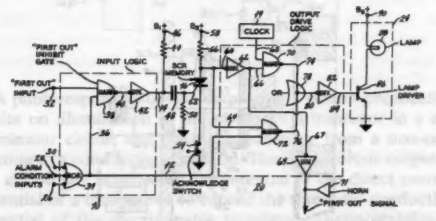
In an electronically-timed multiple-alarm warning system, a plurality of sensors connected to a first switch which controls a first alarm, a first timing circuit triggered by the first switch and which operates a second switch after a first predetermined time delay, the second switch controlling a second alarm and a second alarm driving circuit, a second timing circuit for de-energizing the system after a second predetermined time delay, and a re-set switch for manually re-setting the system in case of false alarm.

3,688,294

DISPLAY ANNUNCIATOR USING SCR MEMORY AND DIGITAL LOGIC CIRCUITRY

William J. Erpelding, Jr., Creve Coeur, Mo., assignor to Monsanto Company, St. Louis, Mo.

Filed June 1, 1970, Ser. No. 42,216
Int. Cl. G08b *21/00*
U.S. Cl. 340—213.1 **4 Claims**



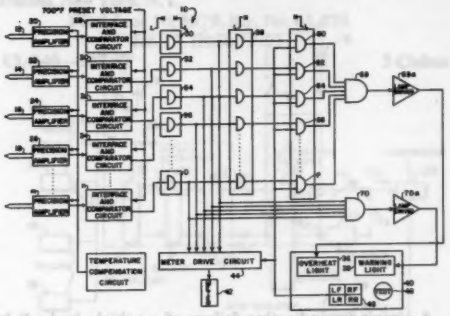
Alarm annunciator circuitry comprising input digital logic gates for selectively controlling the conductivity of an SCR bistable memory element. Output digital logic gates are connected to and controlled by both the SCR and the input logic gates to provide both constant DC and periodically varying output control potentials for driving a lamp display portion of the alarm annunciator circuitry.

3,688,295

ELECTRONIC TEMPERATURE MONITORING SYSTEM

John Tsoras, 553 Damon St., Akron, Ohio; Melvin H. Davis, 57 Karen Lane, Northfield Center, Ohio; David P. Bickel, 2606 Oak Park Blvd., Cuyahoga Falls, Ohio, and Karl H. Starks, Jr., 536 Woodland Dr., Tallmadge, Ohio

Filed Oct. 21, 1969, Ser. No. 868,096
Int. Cl. G08b *17/06*
U.S. Cl. 340—227 R **7 Claims**



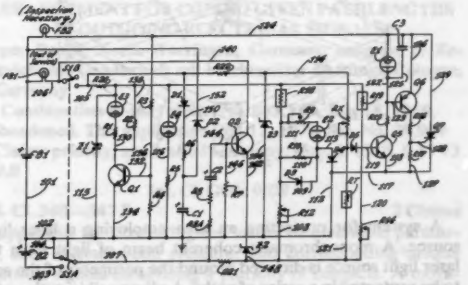
The invention comprises integrated circuits, solid-state devices and discrete components mounted on printed circuit boards cooperating with a thermocouple mounted in sensing locations to produce an indication of temperature at such locations. The thermocouple signals are amplified by a high gain precision amplifier, compensated for thermal environment and compared to predetermined high temperature levels. The comparator design includes a hysteresis effect which prevents the comparator circuit from hunting if the temperature is hovering around the predetermined temperature level. A digital logic network controls the activation of visual or sound indications to show the high temperature. An automatic override feature prevents continuous activation of the display system if a thermocouple fails by open circuitry.

3,688,296

TEMPERATURE MONITORING APPARATUS

Thomas W. Donohue, Malibu; John Brian Murphy, Pacific Palisades, and Thomas B. Bissett, Malibu, all of Calif., assignors to The Bissett Berman Corporation, Santa Monica, Calif.

Filed Aug. 31, 1970, Ser. No. 68,192
Int. Cl. G08b *21/00*
U.S. Cl. 340—228 R **14 Claims**



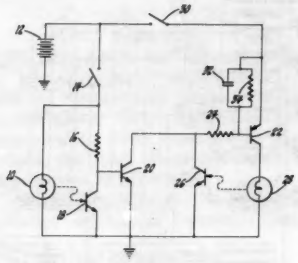
An electronic time and temperature monitoring apparatus employing the use of electrolytic cells (devices which perform electrolytic plating proportional to the electric charge flowing through the cell), and the inclusion of thermistors with electrolytic cells whereby the electrolytic plating is also controlled by temperature.

3,688,297

LIGHTS OUT DETECTOR FOR PROVIDING A CONTINUOUS INDICATION OF THE FAILURE OF LAMPS WHICH ARE ILLUMINATED INTERMITTENTLY OR HAVE INTERMITTENT FAILURES

Thomas G. Barnum, Birmingham, Mich., assignor to General Motors Corporation, Detroit, Mich.

Filed Oct. 27, 1970, Ser. No. 84,311
Int. Cl. G08b *21/00*
U.S. Cl. 340—251 **6 Claims**



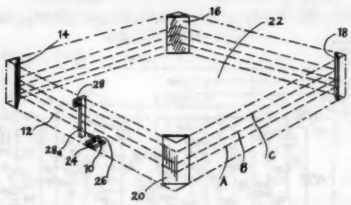
A circuit for indicating failure of a vehicle brake light includes a phototransistor adjacent to the brake light which controls the conduction of a first transistor so that upon failure of the brake light, the first transistor is biased into conduction. The output of the first transistor controls a latching circuit which includes a second transistor in series with an indicating lamp and the vehicle battery. The latching circuit also includes a phototransistor in parallel with the first transistor and positioned adjacent to the indicating lamp. Upon failure of the brake light, the first transistor is biased into conduction to bias the second transistor into conduction and energize the indicator lamp. The phototransistor senses the illumination of the indicator lamp and maintains the second transistor biased into conduction irrespective of the condition of the brake light or the brake switch.

3,688,298

PROPERTY PROTECTION SYSTEM EMPLOYING LASER LIGHT

Peter Miller, Chicago, and Charles G. Call, Deerfield, both of Ill., assignors to Security Systems, Inc.

Filed May 13, 1970, Ser. No. 36,899
Int. Cl. G08b *13/18*
U.S. Cl. 340—258 B **2 Claims**



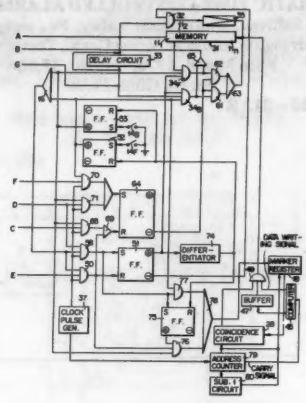
A system for protecting an area employing a laser light source. A monochromatic coherent beam of light from the laser light source is directed around the perimeter of the area to be protected in a series of paths. A photo cell is stationed at the end of the path of laser light for deactivating the laser and actuating an alarm signal when the beam of light is broken by an object such as an intruder moving through the beam. The laser is deactivated in order to safeguard the intruder, innocent or otherwise, and a reset device is provided for initiating the operation of the laser.

3,688,299

CONTROL DEVICE FOR DISPLAY APPARATUS

Shigenori Matsushita, Yokohama; Fumitaka Sato, Kawasaki, and Hisao Chujo, Yokohama, all of Japan, assignors to Tokyo Shibaura Electric Co., Ltd., Kawasaki-shi, Japan

Continuation-in-part of Ser. No. 724,439, April 26, 1968, abandoned. This application July 1, 1971, Ser. No. 158,872
Int. Cl. G06f *3/14*
U.S. Cl. 340—324 A **1 Claim**



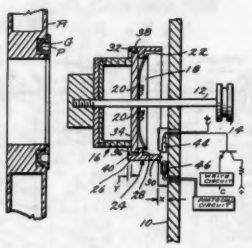
A control device for a display apparatus having storage means for successively storing information to be displayed. The storage means consists of a magnetostrictive delay line, and, pieces of information bearing the head marks of the display apparatus are divided into individual display lines. Means, including forward and backward shifting keys, are provided for extinguishing the pieces of information presented on the terminal display apparatus which represent the first or last display lines and successively shifting the following display lines to a blank space, and, displaying the display line preceding or following the already indicated display line on the last or first display line thus rendered blank.

3,688,300

MAGNETIC TAPE FILE PROTECT SYSTEM

Dale C. Whysong, Falls Church, and Dale E. Leininger, Fairfax, both of Va., assignors to General Kinetics Inc., Reston, Va.

Filed Sept. 2, 1970, Ser. No. 69,182
Int. Cl. G08b *21/00*
U.S. Cl. 340—267 R **4 Claims**



A spring-loaded cylinder of the same diameter as the magnetic tape file protect ring is mounted on the transport reel hub assembly so that the cylinder will be spring-loaded its maximum distance from the transport front panel when the file protect ring is absent and is pressed back towards the panel when the file protect ring is present. A light and

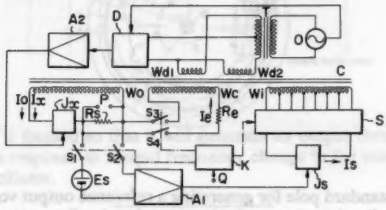
photocell are used to monitor the position of the cylinder. The photocell output then becomes the file protect signal for the using system.

3,688,301

DIGITAL-ANALOG CONVERTING APPARATUS

Takashi Suzuki, Tokyo, and Hikaru Furukawa, Tokyo, both of Japan, assignors to Takeda Riken Industry Company, Ltd., Tokyo, Japan

Filed Oct. 13, 1970, Ser. No. 80,429
Int. Cl. H03k *13/247*
U.S. Cl. 340—347 DA **3 Claims**



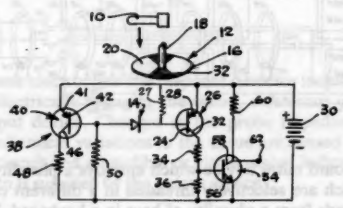
This invention relates to a digital-analogue converting apparatus wherein an input winding in which the number of turns can be varied, an output winding, and a magnetic flux detecting winding are wound on a magnetic core. The input winding is connected with a constant current source through means for selecting the number of input turns according to a digital progression, and the output winding is connected with a variable current source through a standard resistance so that a direct current voltage corresponding to only the number of input turns representing a digital quantity may be obtained as output.

3,688,302

ANALOG TO DIGITAL ENCODER

Curt M. Lampkin, 4225 Langley Rd., Cincinnati, Ohio

Filed May 4, 1970, Ser. No. 34,502
Int. Cl. H03k *3/42*, *13/02*, *13/18*
U.S. Cl. 340—347 P **14 Claims**



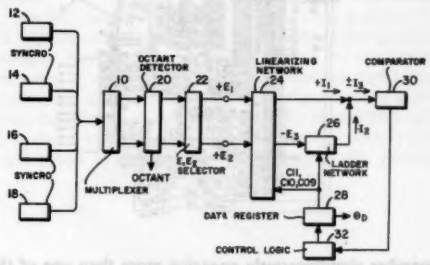
A photoresponsive device employing a silicon photocell to excite on illumination of the photocell a transistor in a discriminator circuit and drive the transistor from a non-conducting to a conducting condition. The photovoltaic output of the silicon cell is added to the potential of the direct current potential of a bias source to exceed the threshold conduction potential of the discriminator transistor. Thermostability is achieved by employing a transistor in the bias source of identical type and similar characteristics to the discriminator transistor. The discriminator transistor has an emitter-collector circuit which includes a load resistor, and the output which is developed across the load resistor is amplified by a common emitter transistor amplifier circuit. The transistor of the amplifier circuit is a N-P-N, while the transistor of the discriminator circuit is a P-N-P type. A switching transistor is used in the common emitter circuit of the discriminator transistor. In the optical encoder disclosed, a separate discriminator circuit is employed for each silicon photodiode, but a single direct current bias source is employed. The switching transistors are pulsed, either sequentially or at the same time to interrogate the photodiodes.

3,688,303

SYNCHRO-TO-DIGITAL CONVERTER

Louis C. Metz, St. Paul, Minn., assignor to Sperry Rand Corporation, New York, N.Y.

Filed June 10, 1970, Ser. No. 45,079
Int. Cl. H03k *13/02*
U.S. Cl. 340—347 SY **3 Claims**



A shaft-angle to digital-data converter that compensates for the nonlinear relationship between a given shaft angle θ and its trigonometric function as represented by first and second analog voltage signals E_1, E_2. The converter operates over the shaft angle θ range of 0° to 45° having a maximum error of 5 minutes of arc. The 45° range is divided into three angular segments with appropriate resistors selectively coupled to an operational amplifier to control its gain so as to generate the variable bias signal for biasing a resistor ladder in the desired manner. Selected bits of an approximated data word selectively couple-in the appropriate resistors while all the bits of the approximated data word are coupled to the resistor ladder. The current signal output of the resistor ladder and a current signal that is generated by the first analog voltage signal E_1 are compared by a comparator which comparison provides, as an output, a binary signal. The binary signal increments or decrements the bits of the approximated data word achieving a final data word using the successive approximation method. The final data word represents the digital value θ_D of the shaft angle θ as represented by the first and second analog voltage signals E_1, E_2.

3,688,304

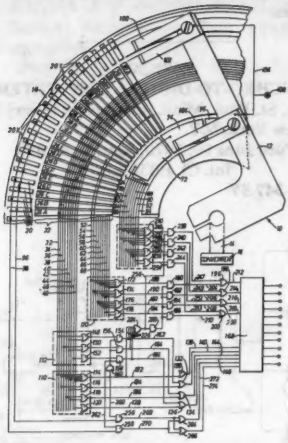
ARRANGEMENT FOR CODING GIVEN PATHLENGTHS IN OUTGOING ELECTRICAL SIGNALS

Eugen Rasch, Koeln-Worringen, Germany, assignor to Erdölchemie Gesellschaft mit beschrankter Haftungs, Cologne, Germany

Continuation-in-part of Ser. No. 843,117, July 18, 1969, abandoned. This application Oct. 12, 1970, Ser. No. 79,969
Claims priority, application Germany, Aug. 6, 1968, P 17 73 999.0
Int. Cl. G08c *9/08*
U.S. Cl. 340—347 P **2 Claims**

Apparatus for converting the values of a variable parameter, such as pneumatic pressure, into corresponding unique electrical signals comprising a plurality of contacts. A movable member is engageable with the plurality of contacts and is adapted to apply a potential thereto. Converting means to provide which is responsive to the variable parameter for converting the value of the parameter into a corresponding position of the movable member. Circuit means is connected with the plurality of contacts for producing a different electrical signal in response to the respective engagement of each one of said

plurality of contacts by the movable member. The circuit means includes a blocking circuit for blocking all but one of the electrical signals produced in response to the movable



member simultaneously engaging more than one of the plurality of contacts thereby insuring that only one unique electrical signal will be generated for each value of the parameter.

3,688,305

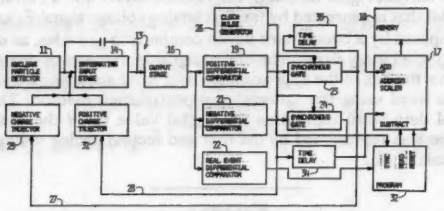
PULSE HEIGHT ANALYZER WITH DIGITAL READOUT

William W. Goldsworthy, Orinda, Calif., assignor to The United States of American as represented by the United States Atomic Energy Commission

Filed Nov. 18, 1970, Ser. No. 90,532

Int. Cl. H03k *13/20*

U.S. Cl. 340—347 NT **2 Claims**



A feedback-controlled pulse-amplitude integrator and amplifier used as an analog-to-digital converter that converts event-liberated charges, emanating from a nuclear-particle detector, directly to numbers rather than to analog-dependent voltages.

3,688,306

DIGITAL TYPE ROTATIONAL ANGLE DETECTOR

Kazuo Oishi; Noriyoshi Ando, and Hiroshi Yoshida, all of Kariya, Japan, assignors to Nippondenso Co., Ltd., Kariya-shi, Japan

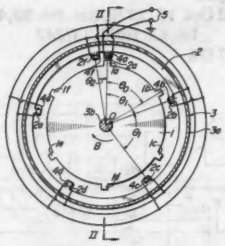
Filed March 17, 1971, Ser. No. 125,286

Claims priority, application Japan, March 18, 1970, 45/23254; March 18, 1970, 45/23255

Int. Cl. G08c *5/00*

U.S. Cl. 340—347 P **5 Claims**

A digital type rotational angle detecting device has been provided, for determining the rotational angle of a rotating axis. The apparatus includes a rotor mounted on an axis having a plurality of, permanent magnet, salient poles formed about the outer periphery thereof, and stator means having a plurality of salient poles, formed on the inner periphery thereof, and disposed about the outer periphery of the rotor means, with a selected gap maintained therebetween. Coils are provided for each staor pole and would on the stator means, for generating output voltage signals due to variations in magnetic fluxes induced in the stator poles when the axis is rotated. Each set of rotor and stator poles includes, a respec-



tive standard pole for generating a reference output voltage in the coils when the standard rotor pole is in alignment with the standard stator pole, such position representing a pre-determined reference angle of the rotating axis relative to said standard rotor pole. Circuit means is coupled with each of the coils for counting a selected number of output voltage signals generated in the coils relative to said reference output voltage, whereby a rotational angle of the axis is taken in accordance with a selected number of counts of said counting means.

3,688,307

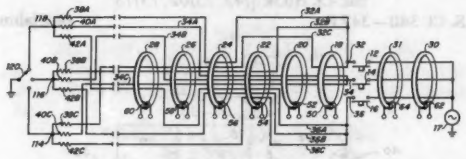
RING CORE KEYBOARD ENTRY DEVICE

Stanley K. Chao, Lexington, Mass., assignor to Data Electronics Corporation, Burlington, Mass.

Filed Sept. 28, 1970, Ser. No. 76,189

Int. Cl. G08c *1/00*; G11c *17/00*

U.S. Cl. 340—365 **11 Claims**



A keyboard entry device which employs a plurality of ring cores which are selectively threaded in a different combination by leads from a plurality of keys in a keyboard. Depending upon the particular keys depressed, a different combination of cores will be energized.

3,688,308

APPARATUS FOR DETECTING THE VOLUME OF TRAFFIC

Imamura Makoto, Tokyo, and Sato Ikuo, Kawasaki, both of Japan, assignors to Tokyo Shibaura Electric Co., Ltd., Kawasaki-shi, Japan

Filed Oct. 6, 1970, Ser. No. 78,525

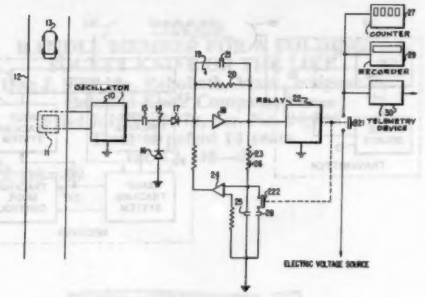
Claims priority, application Japan, Oct. 6, 1969, 44/94502; Nov. 7, 1969, 44/05037

Int. Cl. G08g *1/08*

U.S. Cl. 340—38 L **8 Claims**

An apparatus for detecting the volume of traffic includes a single oscillator having an oscillating coil which is embedded in the roadbed of a roadway. A converter is provided for con-

verting the output frequency signal of the oscillator to a corresponding voltage signal and a relay device is connected to the output of the converter for responding thereto. The converter is formed so that it will generate an output therefrom only in response to a rapid frequency change in the output of the oscillator.



3,688,309

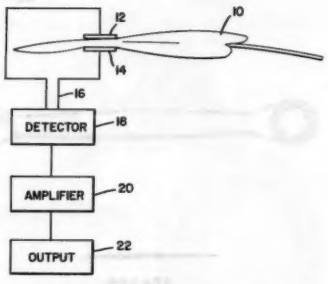
DEVICE FOR DETECTING AND DISPLAYING THE RESPONSE OF A TISSUE TO STIMULI

Herman W. Volberg, P.O. Box 125, Oahu, Hawaii

Filed Sept. 9, 1970, Ser. No. 70,702

Int. Cl. G08b *21/00*

U.S. Cl. 340—421 **11 Claims**



A tissue electrochemical response detector includes a probe input electrically engaging the tissue, a detector circuit, and an output device. Changes in the probe impedance due to electrochemical variations in the tissue are sensed by the detector circuit and an audible or visible signal indicative of the variation is supplied by the output device.

3,688,310

Patent Not Issued For This Number

3,688,311

PARABOLIC ANTENNAS

Jacques Salmon, Paris, France, assignor to CSF-Compagnie Generale De Telegraphie San Fil

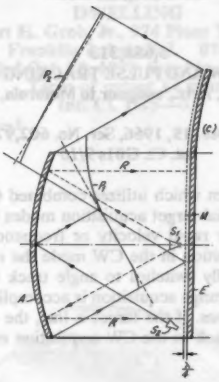
Filed Aug. 19, 1964, Ser. No. 391,076

Claims priority, application France, Sept. 9, 1963, 69946916

Int. Cl. H01q *19/12*

U.S. Cl. 343—755 **5 Claims**

An ultra high frequency antenna comprising a reflector having a focus and a focal plane, one radiating source at said focus and at least one radiating source in said focal plane, offset with respect to said focus, for illuminating said reflector, said sources producing at least two wave fronts of different directions and phase correcting means in the path of the wave front(s) originating from said offset source(s), said correcting means lying outside the path of said wave front originating from said source located at said focus.



3,688,312

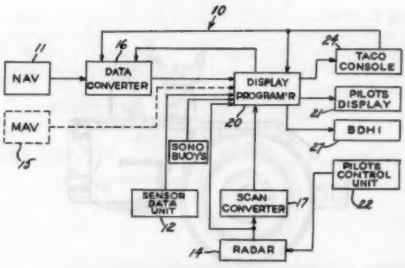
INTEGRATED DISPLAY SYSTEM FOR COMBAT AIRCRAFT

Walter R. Gustafson, Furlong; William H. McMillen, Perkasie; Jackson Kemper, Jr., Ivyland, all of Pa., and Leonard Newman, White Plaines, N.Y., assignors to Loral Corporation, Scarsdale, N.Y., by said Newman and The United States of America as represented by the Secretary of the Navy, by said Gustafson, MacMillen, and Kemper

Filed Jan. 7, 1970, Ser. No. 1,242

Int. Cl. G01s *7/22, 9/02*

U.S. Cl. 343—6 R **6 Claims**



An integrated display system for increasing the operational effectiveness of aircraft in the performance of antisubmarine warfare missions. The disclosed embodiment provides a tactical coordinator concept as a means to achieve effective analysis of sensory data and stimulate optional decision making for the search and attack phases of the mission. This reduces the

burden on the pilot and permits inclusion of a bright radar display at the pilot station. Coordinated presentation of navigational and tactical data is provided on cathode ray tube displays at both tactical coordinator and pilot stations.

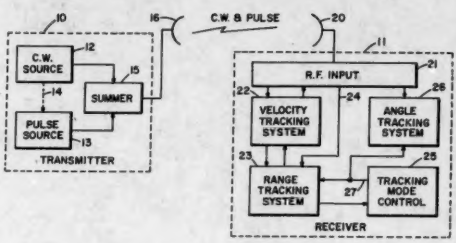
3,688,313

COMBINED CW AND PULSE TRACKING SYSTEMS

Neil C. Kern, Mesa, Ariz., assignor to Motorola, Inc., Franklin Park, Ill.

Filed Dec. 19, 1966, Ser. No. 602,977
Int. Cl. G01s 9/16
U.S. Cl. 343—7.3 **22 Claims**

A tracking system which utilizes combined CW and pulse signals. During initial target acquisition modes the CW signal portion is used for rapid velocity or frequency acquisition. Upon target acquisition in the CW mode the receiver of the system automatically switches to angle track and continues range search until range acquisition is accomplished using the pulse signals portions. If the target is lost, the receiver automatically reverts back to the CW acquisition mode. This disclosure includes description of the system, several transmitters for generating the combined CW and pulse signals and a receiver. Also described are a unique modulation scheme for pulse modulating a CW signal, and a received energy comparison scheme.



DESIGNS

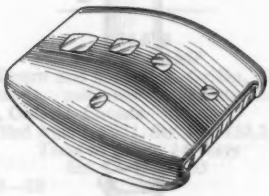
AUGUST 29, 1972

224,676
HANDLE MEMBER FOR A FOLDING POCKET KNIFE OR THE LIKE
Don J. Meserve, Rehoboth, Mass., assignor to Colonial Knife Company, Inc.
Filed July 21, 1970, Ser. No. 24,046
Term of patent 14 years
Int. Cl. D8—*03*
U.S. Cl. D8—99

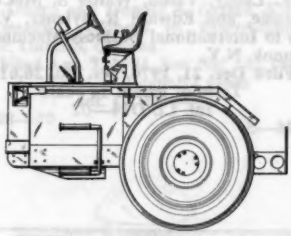
224,677
WRENCH
John A. Lehnhard, Oak Brook, Ill., assignor to Sears, Roebuck and Co., Chicago, Ill.
Filed Dec. 14, 1970, Ser. No. 26,492
Term of patent 14 years
Int. Cl. D8—*05*
U.S. Cl. D8—28

224,678
MOLDED PACKAGING TRAY FOR MEAT OR THE LIKE
Richard F. Reifers, New Canaan, Conn., and Kenneth D. Bixler, Huntington, N.Y., assignors to Diamond International Corporation, New York, N.Y.
Filed Jan. 27, 1971, Ser. No. 110,376
Term of patent 14 years
Int. Cl. D9—*03*
U.S. Cl. D9—219

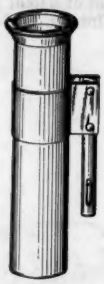
224,679
DWELLING
Curt H. Grob, Jr., 974 Pines Terrace, Franklin Lakes, N.J. 07417
Filed Oct. 29, 1970, Ser. No. 25,721
Term of patent 14 years
Int. Cl. D25—*03*
U.S. Cl. D13—1

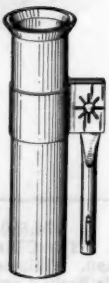


224,680
TRACTOR
William H. Bechman, Williamsville, N.Y., assignor to Westinghouse Air Brake Company, Pittsburgh, Pa.
Filed June 7, 1971, Ser. No. 150,882
Term of patent 14 years
Int. Cl. D12—*09*
U.S. Cl. D14—3



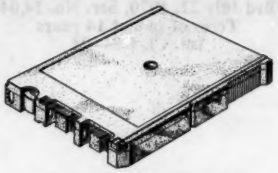
224,681
FISHING POLE HOLDER
James J. Dunphy, 610 52nd St., Brooklyn, N.Y. 11220
Filed Oct. 13, 1970, Ser. No. 25,466
Term of patent 14 years
Int. Cl. D22—*05*
U.S. Cl. D22—22



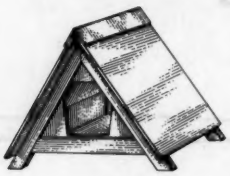


224,682
DATA PROCESSOR
Loring C. Bixler, Vestal, Arnold M. Davis, Poughkeepsie, Donald F. Lahey, Vestal, Walter S. McCormick, Jr., Poughkeepsie, and Edward R. Wiener, Vestal, N.Y., assignors to International Business Machines Corporation, Armonk, N.Y.
Filed Dec. 21, 1970, Ser. No. 26,610
Term of patent 14 years
Int. Cl. D14—*02*
U.S. Cl. D26—5

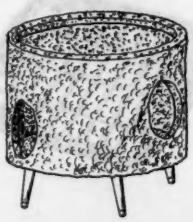
224,683
MAGNETIC TAPE CARTRIDGE
Eiichi Wada and Yoshio Ono, Kanagawa-ken, Japan, assignors to Pioneer Electronic Corporation, Tokyo, Japan
Filed June 28, 1971, Ser. No. 157,799
Term of patent 14 years
Int. Cl. D14—*01*; D16—*99*
U.S. Cl. D26—14



224,684
ANIMAL SHELTER FOR A DOG OR THE LIKE
Thayer J. Hoff, 6817 N. 22nd Place, Phoenix, Ariz. 85016
Filed Dec. 7, 1970, Ser. No. 26,383
Term of patent 14 years
Int. Cl. D30—*02*
U.S. Cl. D30—1

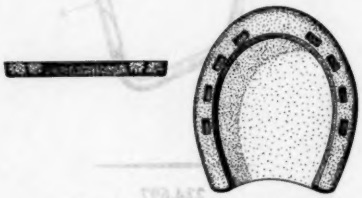


224,685
PET HOUSE
Dewitt A. Michlap, 6728 Kathernia, Van Nuys, Calif. 91405, and James D. Wright, 13381 Gilbert, Garden Grove, Calif. 92644
Filed Mar. 31, 1971, Ser. No. 130,045
Term of patent 14 years
Int. Cl. D30—*02*
U.S. Cl. D30—1

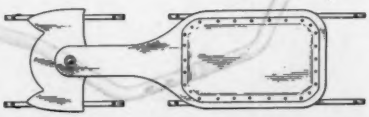


224,686
PET HOUSE
Dewitt A. Michlap, 6728 Kathernia, Van Nuys, Calif. 91405, and James D. Wright, 13381 Gilbert, Garden Grove, Calif. 92644
Filed Mar. 31, 1971, Ser. No. 130,046
Term of patent 14 years
Int. Cl. D30—*02*
U.S. Cl. D30—1

224,687
WEBBED HORSESHOE
Norman C. Jeckel, P.O. Box 22, Steamboat Springs, Colo. 80477
Filed Feb. 11, 1971, Ser. No. 114,748
Term of patent 14 years
Int. Cl. D30—*99*
U.S. Cl. D30—35



224,688
BOBSLED
Helmut Bruno Schneider, 75 Florence Ave., Willowdale, Ontario, Canada
Filed June 28, 1971, Ser. No. 157,817
Claims priority, application Canada Dec. 31, 1970
Term of patent 14 years
Int. Cl. D12—*14*
U.S. Cl. D34—15

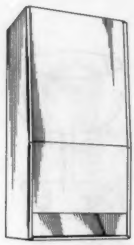


224,689
GOBLET
Charles J. Gielda, Coventry, Conn. (208 Main St., Manchester, Conn. 06040)
Filed Mar. 15, 1971, Ser. No. 124,649
Term of patent 14 years
Int. Cl. D7—*01*
U.S. Cl. D36—8

224,690
FLOOR LAMP
Gordon L. Duern and Donald S. Griffin, Kitchener, Ontario, Canada, assignors to Electrohome Limited, Kitchener, Ontario, Canada
Filed Apr. 7, 1971, Ser. No. 132,244
Term of patent 14 years
Int. Cl. D26—*05*
U.S. Cl. D48—20

224,691
TABLE LAMP
Gordon L. Duern and Donald S. Griffin, Kitchener, Ontario, Canada, assignors to Electrohome Limited, Kitchener, Ontario, Canada
Filed Apr. 7, 1971, Ser. No. 132,249
Term of patent 14 years
Int. Cl. D26—*05*
U.S. Cl. D48—20

224,692
PACKAGE DISPENSING CONTAINER
Laverne E. Gray, Dallas, Tex., assignor to Lone Star Container Corporation, Dallas, Tex.
Filed Dec. 21, 1970, Ser. No. 26,588
Term of patent 14 years
Int. Cl. D9—*03*
U.S. Cl. D52—2

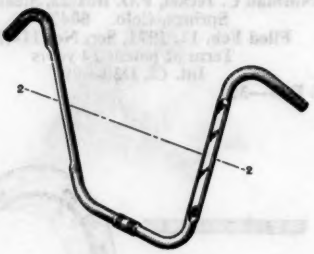


224,693
CARPET MEASURING GAUGE
Lloyd E. Anderson, 3123 Upton Ave. N. 55412, and Gilbert L. Alinder, 5312 Shoreview Ave. S. 55417, both of Minneapolis, Minn.
Filed May 3, 1971, Ser. No. 139,988
Term of patent 14 years
Int. Cl. D10—*04*
U.S. Cl. D52—6

224,694
FONT OF TYPE
William W. McDowell III, 13942 Rte. 108, Highland, Md. 20777
Filed Mar. 30, 1971, Ser. No. 129,658
Term of patent 14 years
Int. Cl. D18—*03*
U.S. Cl. D64—12

224,695
ROAD MARKER
Douglas M. Cullinan, Olifantsfontein, Transvaal, Republic of South Africa, assignor to Cullinan Refractories Limited, Olifantsfontein, Transvaal, Republic of South Africa
Filed Sept. 16, 1970, Ser. No. 25,031
Claims priority, application Republic of South Africa Mar. 20, 1970
Term of patent 14 years
Int. Cl. D29—*02*
U.S. Cl. D72—1

224,696
HANDLEBAR
Carlton P. Pawsat and Robert F. Humlong, Maysville, Ky., assignors to Wald Manufacturing Company, Inc., Maysville, Ky.
Filed Sept. 21, 1970, Ser. No. 25,085
Term of patent 14 years
Int. Cl. D12—*16*
U.S. Cl. D90—11



224,697
BICYCLE HANDLEBAR
Carlton P. Pawsat and Robert F. Humlong, Maysville, Ky., assignors to Wald Manufacturing Company, Inc., Maysville, Ky.
Continuation-in-part of design application Ser. No. 23,640, June 24, 1970. This application Feb. 2, 1971, Ser. No. 112,096
Term of patent 14 years
Int. Cl. D12—*16*
U.S. Cl. D90—11

224,698

BICYCLE HANDLEBAR

Carlton P. Pawsat and Robert F. Humlong, Maysville, Ky., assignors to Wald Manufacturing Company, Inc., Maysville, Ky.

Continuation-in-part of design application Ser. No. 23,641, June 24, 1970. This application Feb. 2, 1971, Ser. No. 112,097

Term of patent 14 years

Int. Cl. D12—*16*

U.S. Cl. D90—11

224,699

BICYCLE HANDLEBAR

Carlton P. Pawsat and Robert F. Humlong, Maysville, Ky., assignors to Wald Manufacturing Company, Inc., Maysville, Ky.

Continuation-in-part of design application Ser. No. 23,644, June 24, 1970. This application Feb. 2, 1971, Ser. No. 112,100

Term of patent 14 years

Int. Cl. D12—*16*

U.S. Cl. D90—11

A B C D E F
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S T U V W X
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1 2 3 4 5 6
7 8 9 0

LIST OF PATENTEES

TO WHOM

PATENTS WERE ISSUED ON THE 29TH DAY OF AUGUST, 1972

NOTE.—Arranged in accordance with the first significant character or word of the name (in accordance with city and telephone directory practice).

A-T-O Inc.: *See—*
Rosenfeld, Howard; and Wetzler, Justin J., 3,686,899.

A/S Norcem: *See—*
Stranger-Johannessen, Per, 3,687,807.

A/S Norsk Viftefabrikk: *See—*
Hover, Borre, 3,687,056.

Aagaard, Einar Andreas, to U.S. Philips Corporation. Circuit arrangement for a pulse-controlled connection of a telecommunication signal source to a telecommunication signal load. 3,688,051, Cl. 179-18.0gf.

AB Centralsug: *See—*
Ekstrom, Per-Olof; and Hyden, Hans, 3,687,503.

AB Gustavsbergs Fabriken: *See—*
Schonberg, Erik, 3,687,052.

Abbott, Franklin Paul, to Lubrizol Corporation, The. Lubricants containing oil-soluble graft polymers derived from degraded ethylene-propylene interpolymers. 3,687,849, Cl. 252-47.500.

Abbott Laboratories: *See—*
Bernstein, Edith; Garmaise, David Lyon; and Plotnikoff, Nicholas Peter, 3,687,960.
Bernstein, Edith; Garmaise, David Lyon; and Plotnikoff, Nicholas Peter, 3,687,961.

Abbott, Roderic M. Removable dolly wheel for boat. 3,687,476, Cl. 280-47.320.

Abcor Inc.: *See—*
Nuwayser, Elie S., 3,687,129.

Abe, Takashi: *See—*
Nagase, Shunji; Abe, Takashi; Baba, Hajime; and Kodaira, Kazuo, 3,687,825.

Abel, Heinz; and Harris, Melvin, to Ciba-Geigy AG. Simultaneous dyeing of wool and cotton fibrous material with condensation product of formaldehyde and mixture of sulfones and hydroxybenzenesulfonic acids. 3,687,603, Cl. 8-23.000.

Abriss, Murray S.; and McDowell, Maurice J., to Du Pont de Nemours, E. I., and Company. Water base paints having an improved balance of anti-drip and leveling qualities. 3,687,885, Cl. 260-29.6wb.

Accum-Matic Systems, Inc.: *See—*
Broser, Richard, 3,687,275.

Ace Tool Engineering Co., Inc.: *See—*
Milovich, Walter E., 3,686,787.

ACF Industries, Incorporated: *See—*
O'Leary, Walter E.; and Charles, Asa Franklin, 3,687,084.
Yurkoski, Frank R.; Coyle, Edward L.; Needham, Robert F.; and Rollins, Dallas W., 3,687,087.

Ackermann, Jacob; Ferre, Franceo; and Felice, Tetaz, to Societa Italiana Resine S.p.A. Process for polymerizing gaseous formaldehyde. 3,687,899, Cl. 260-67.0fp.

Adachi, Michio: *See—*
Sakamoto, Toshikazu; and Adachi, Michio, 3,687,495.

Adam, Vernon F.; and Vogel, Carl A. Trailer for erecting and transporting storage tanks. 3,687,319, Cl. 214-501.000.

Adams, Harvey N. Protective coating for surfaces of silver and mirror fabrication. 3,687,713, Cl. 117-71.00r.

Adams, James E.: *See—*
Haas, Werner E. L.; Adams, James E.; and Flannery, John B., Jr., 3,687,515.

Adams, Richard Calvin, to Schjeldahl, G. T., Company. Re-wind mechanism with profiled cam-potentiometer. 3,687,389, Cl. 242-67.500.

Adams, Richard W. Precast wall construction. 3,686,817, Cl. 52-586.000.

Addressograph-Multigraph Corporation: *See—*
Koch, Robert M.; Webb, Samuel L.; and Toby, Dennis E., 3,687,049.
Van Dusen, Charles H., Jr., 3,687,694.

Adelson, Alexander M.; Swartz, Jerome; and Tomasulao Walter M., Jr., to Wild Rover Corporated. Switch forms for connecting one terminal to a plurality of other terminals. 3,688,066, Cl. 200-159.00b.

Adelstein, Jerome; and Frey, Robert R. Method of incorporating volatile aromatics into hard candy. 3,687,691, Cl. 99-134.00r.

Admiral Corporation: *See—*
Ekstrand, Roy A., 3,688,021.

Adwick, Albert Graham; and Nicholson, Henry, to Morganite Resistors Limited. Shunt for oil-immersed circuit breaker. 3,688,242, Cl. 338-49.000.

Aetva-Standard Engineering Company: *See—*
Scheib, William R., 3,687,348.

Aga Aktiebolag: *See—*
Beer, Palle-Finn, 3,688,290.

Agfa-Gevaert Aktiengesellschaft: *See—*
Kreuder, Manfred; Metzner, Wolfgang; Sobel, Johannes; Himmelmann, Wolfgang; and Nittel, Fritz, 3,687,671.
Riester, Oskar, 3,687,678.

Agon Uhrenfabrik Kobert Triebold A. G.: *See—*
Hurt, Zeno, 3,686,884.

Airhart, Robert V.: *See—*
Balogh, Edward, Jr.; Cook, Daewen J.; Bube, Carl E.; and Airhart, Robert V., 3,688,263.

Ajfro, Fortunato S.: *See—*
Gottfried, Reuter; and Ajfro, Fortunato S., 3,687,227.

Akamatsu, Kiyoshi; Maruta, Masayasu; and Yonekura, Yasushi, to Asahi Kasei Kogyo Kabushiki Kaisha. Apparatus for the preparation of printing plate of photosensitive resin. 3,687,785, Cl. 156-501.000.

Akell Robert B.; and Kemp, Harold S., to Du Pont de Nemours, E. I., and Company. Process for separating mixtures of N,N-dimethylacetamide and acetic acid by distilling with alternate pressures. 3,687,820, Cl. 203-78.000.

Akeyama, Katsumi: *See—*
Kurihara, Sumio; Araki, Kazumi; Akeyama, Katsumi; and Takasawa, Yoshimasa, 3,687,810.

Akeyama, Kenji; and Miyamoto, Norimasa, to Hitachi, Ltd. Multiple alloy ohmic contact for a semiconductor device. 3,686,698, Cl. 317-234.00r.

Akira, Konno, to Pioneer Electronic Corporation. Automatic telephone answering apparatus. 3,688,044, Cl. 179-6.00r.

Akiyama, Hiroyuki: *See—*
Miyamoto, Akira; and Akiyama, Hiroyuki, 3,687,592.

Aktiebolaget Electrodius: *See—*
Wijard, Endel; and Odsvall, Jan, 3,687,635.

Aktiebolaget Electrolux: *See—*
Liljendahl, Sven Algot Joel, 3,686,693.

Aktiebolaget Karlstads Mekaniska Werkstad: *See—*
Larsson, John Lars Arvid, 3,687,733.

Akzona Incorporated: *See—*
Werner, Helmut; and Stapp, Hans, 3,687,759.

Albany Machine & Supply, Inc., mesne: *See—*
Fritz, Rene; and Fritz, Rene Eugene, 3,687,269.

Albrecht, Ernst: *See—*
Pfister, Franz; Albrecht, Ernst; Durner, Josef; and Maus, Eicke, 3,687,005.

Albright & Wilson Limited: *See—*
Porter, Kenneth E.; Ellis, Stephen R. M.; Ashton, Neil; and Hands, Clifford H. G., 3,687,818.

Alexander, Ernest John; and Mooradian, Aram, to Sterling Drug Inc. 9-Aroyl-1,2,3,4-tetrahydro-carbozole-3,3-dicarboxylic acids. 3,687,969, Cl. 260-315.000.

Allard, Pierre; and Dumas, Victor, to Societe Rhodiaceta. Process for making a heat resistant reinforced laminate. 3,687,776, Cl. 156-306.000.

Alleaume, Jean H.; and Fournier, Gilbert C. F., said Alleaume assor. to Technigaz. Apparatus for producing corrugated dihedral blanks. 3,686,920, Cl. 72-399.000.

Allegheny Ludlum Industries, Inc.: *See—*
Tommaney, Joseph W.; and Preston, Jack, 3,687,187.

Allen, Charles R. Snap on drywall fastening system. 3,686,810, Cl. 52-243.000.

Allied Chemical Corporation: *See—*
Dardoufas, Kimon C., 3,687,721.
Li, Hsin Lang; Lamb, George Edwin Robert; and Prevorsek, Dusan Ciril, 3,686,722.
Saunders, Leonard Victor John; and Rochell, David, 3,686,826.
Woole, Cyril; and Michael, Richard O., 3,687,626.

Allied Power Industries, Inc.: *See—*
Motl, Daniel M., 3,686,954.

Allmanna Svenska Elektriska Aktiebolaget: *See—*
Johansson, Bengt; and Nilsson, Erland, 3,688,155.

Allplas A.G.: *See—*
Baum, Hans Eduard, 3,687,329.

Almenti, Giovanni, to Industrie Pirelli S.p.A., mesne. Insulation winding and wire standing machine for the production of telecommunication cables. 3,686,843, Cl. 57-12.000.

Almond, Robert James; and Hagan, Edward Francis, to Du Pont de Nemours, E. I., and Company. Device for contacting and exposing sensitized elements. 3,687,552, Cl. 355-113.000.

Alston, Leslie W. L. Drawers for furniture. 3,687,512, Cl. 312-330.000.

Altemus, William C., to Computer Image Corporation. Beam intensity compensator. 3,688,028, Cl. 178-6.800.

Alton Box Board Company: *See—*
Reisman, Abraham J.; and Wilkinson, Thomas B., III, 3,687,767.

Aluminum Company of America: *See—*
La Barge, Robert L., 3,686,795.
Parks, Keith W., 3,687,431.

Amerace Esna Corporation: *See—*

Grimm, David W., 3,687,182.

American Can Company: *See—*
Kawecher, Ralph William; and Platt, John Robert, 3,687,351.

American Cyanamid Company: *See—*
Grayson, Martin, 3,687,803.
Murfitt, Donald; and Peeso, James Bruce, Jr., 3,687,413.
Padmanathan, Thurairajah, 3,687,972.

American Hospital Supply Corporation: *See—*
Lanigan, Richard W., 3,686,696.

American Liner Supply Co.: *See—*
Rosenfeld, Howard; and Wetzler, Justin J., 3,686,899.

American Olean Tile Company, Inc., mesne: *See—*
Ray, Glenn E., 3,686,703.

American Safety Equipment Corporation of Michigan: *See—*
Webb, Daniel D., 3,686,690.

American Zinc Company: *See—*
Carpenter, Robert K.; and Pagel, Richard F., 3,687,828.

Ametek, Inc.: *See—*
Mollick, Minton, 3,686,944.

AMP Incorporated: *See—*
Capper, Harry Milton; and Wagner, Richard Maxwell, 3,687,104.
Hammond, James Woodrow, 3,686,752.

Anderson, Marshall N., to Sellstrom Manufacturing Company. Ear-protecting device. 3,686,691, Cl. 2-209.000.

Anderson, Ray C. Projector player. 3,687,560, Cl. 352-8.000.

Anderson, Richard N., to Anderson, V. E., Mfg., Co. False window muntin bar structure. 3,686,814, Cl. 52-456.000.

Anderson, Robert F. Machine tools. 3,687,441, Cl. 269-47.000.

Anderson, Robert F. Set up jack. 3,687,443, Cl. 269-309.000.

Anderson, V. E., Mfg., Co.: *See—*
Anderson, Richard N., 3,686,814.

Andersson, Per Ulf. Load handling mechanism. 3,687,300, Cl. 214-1.00q.

Ando, Noriyoshi: *See—*
Oishi, Kazuo; Ando, Noriyoshi; and Yoshida, Hiroshi, 3,688,306.

Andres, Rudolf; and Moeller, Harmann, to Daimler-Benz Aktiengesellschaft. Locking system for window lifters actuated by an auxiliary force. 3,687,215, Cl. 180-111.000.

Andrews, Alday B.; and Coursen, David L., to Du Pont de Nemours, E. I., and Company. Pulse producing assembly. 3,687,074, Cl. 102-22.000.

Anenko, July Georgievich Emely: *See—*
Zuev, Ivan Mikhailovich; Gorsky, Anatoly Vasilievich; Medovar, Boris Izrailevich; Anenko, July Georgievich Emely; Latashi, Jury Vadimovich; and Bogachenko, Alexei Georgievich, 3,687,189.

Anner, Georg, to Ciba-Geigy Corporation. 21-Mercapto-steroids of the pregnane series. 3,687,942, Cl. 260-239.550.

Antkiw, Stephen, to Schlumberger Technology Corporation. Borehole fluid density logging tool with non turbulent measuring chamber flow. 3,688,115, Cl. 250-71.50r.

Antoine, Pierre N.: *See—*
Bedjai, Claude A.; and Antoine, Pierre N., 3,688,268.

Anton, Wink; and Williams, Robert J., to Cadillac Products, Inc. Manually openable leakproof package construction. 3,687,358, Cl. 229-66.000.

Apelstrand, Lennart; Goteborg, Fagerlund; and Jar, Stig. Ship's loading ramp. 3,687,308, Cl. 214-15.00r.

Appleby, Paul E.; Folden, Denver C.; and Stuhldreher, Paul R., to Goodyear Tire & Rubber Company, The. Method and apparatus for stripping flexible article from a building drum. 3,687,756, Cl. 156-111.000.

Applied Power Industries, Inc.: *See—*
Stein, Gary; and Heindich, Allan E., 3,687,012.

Araki, Kazumi: *See—*
Kurihara, Sumio; Araki, Kazumi; Akeyama, Katsumi; and Takasawa, Yoshimasa, 3,687,810.

Argunov, Jury Vasilievich: *See—*
Maslennikov, Konstantin Nikolaevich; Argunov, Jury Vasilievich; Savonkin, Nikolai Porfirievich; Smyvin, Rudolf Mikhailovich; and Chzhen, Igor Alexeevich, 3,688,141.

Argus Chemical Corporation: *See—*
Lewis, Roger N.; and Friedman, Ronald L., 3,687,867.

Ariamonov, Viktor Leonidovich: *See—*
Paton, Boris Evgenievich; Medovar, Boris Ezrailevich; Chekotilo, Leonty Vasilievich; Pavlov, Leonid Viktorovich; Ariamonov, Viktor Leonidovich; Borisovich, Kiev, Alexandr; Kamensky, Leonid Alexeevich; Ishunkin, Veniamin Alexandrovich; Belenky, Alexandr Mikailovich; Shevisov, Anatoly Ivanovich; Grinsnpon, Semen Yakovlevich; Sysenko, Anatoly Pavovich; Dubinsky, Rudolf Solomonovich; Papav, Valery Georgievich; and Toschev, Alexandr Mikhaivich, 3,687,188.

Arima, Kei; Tamura, Gakuzo; and Kakinuma, Atsushi, to Takeda Chemical Industries, Ltd. Surfactin. 3,687,926, Cl. 260-112.500.

Armco Steel Corporation: *See—*
Knapp, Earle L., 3,687,105.

Armour-Dial, Inc.: *See—*
Taber, David; and Raphaelian, Leo A., 3,687,856.

Armstrong, Glenn K.: *See—*
Wentworth, Ralph L.; and Armstrong, Glenn K., 3,687,684.

Arnold, Peter: *See—*
Marshall, Peter W.; Arnold, Peter; and Dunn, Francis P., 3,687,204.

Aronsen, Daniel, Jr., mesne: *See—*
Erbil, Ibrahim Hidayet, 3,686,816.

Arpe, Hans-Jurgen: *See—*
Hornig, Lothar Heinz; and Arpe, Hans-Jurgen, 3,687,993.

Asahi Kasei Kogyo Kabushiki Kaisha: *See—*
Akamatsu, Kiyoshi; Maruta, Masayasu; and Yonekura, Yasushi, 3,687,785.

Asahi Kogaku Kogyo Kabushiki Kaisha: *See—*
Watanabe, Koichiro, 3,687,044.

Asami, Shojiro: *See—*
Miura, Yotaro; and Asami, Shojiro, 3,688,059.

Aser, Gilbert A.; and Sullivan, William A., to Xerox Corporation. Xerographic duplex technique. 3,687,541, Cl. 355-14.000.

Ashton, Neil: *See—*
Porter, Kenneth E.; Ellis, Stephen R. M.; Ashton, Neil; and Hands, Clifford H. G., 3,687,818.

Atkinson, Archibald H. Structural chord members for joist construction. 3,686,819, Cl. 52-693.000.

Atlantic Richfield Company: *See—*
Thienot, Marc O.; and Verdol, Joseph A., 3,687,914.

Attwood, John G.: *See—*
Kosrow, Robert L.; and Attwood, John G., 3,687,097.

Audran, Roger G. L.; Dostes, Clude G.; and Marechal, Claude M. Photosensitive elements having high surface concentration of silver halide and stabilized against contamination fog. 3,687,677, Cl. 96-109.000.

Auto Pak Company: *See—*
Clar, Milton, 3,687,063.

Autoboard Corporation: *See—*
Glaze, John W., Jr.; and Propst, James P., 3,686,726.

Avant Corporation: *See—*
Macone, Frederick W.; and Lafortunf, Normand, 3,687,273.

Avant Incorporated: *See—*
Macone, Frederick W.; and La Fortune, Normand J., 3,687,040.

Avco Corporation: *See—*
Burke, Howard B., Jr., 3,687,082.

Averbach, Alexander, to Dick, A. B., Company. Photochromic element. 3,687,672, Cl. 96-90.0pc.

Avon Rubber Company Limited: *See—*
Carter, Douglas Vaughan, 3,687,293.

Awano, Taikichi: *See—*
Hikida, Ryotaro; Awano, Taikichi; Danno, Atsushi; and Kojima, Yoshiro, 3,686,917.

Ayala, Kenneth J.: *See—*
Krause, Ronald O.; and Ayala, Kenneth J., 3,687,151.

Ayling, John K.; and Moore, Richard D., to International Business Machines Corporation. Monolithic memory system with bi-level powering for reduced power consumption. 3,688,280, Cl. 340-173.0ff.

Baba, Hajime: *See—*
Nagase, Shunji; Abe, Takashi; Baba, Hajime; and Kodaira, Kazuo, 3,687,825.

Babey, Victor Stephen. Apparatus for filling thin tubular containers with a liquid. 3,687,175, Cl. 141-59.000.

Backus, Milo M.; and Schneider, William A., to Texas Instrument, Incorporated. Method for locating impedance discontinuities in a wave propagating medium. 3,688,249, Cl. 340-15.5dp.

Badcock, Neville Peter. Apparatus for irrigating land. 3,687,372, Cl. 239-183.000.

Badessa, Rosario S., to Damon Corporation. Organ stop memory circuit. 3,686,994, Cl. 84-345.000.

Badische Anilin- & Soda-Fabrik Aktiengesellschaft: *See—*
Bobenheim-Roxheim, Manfred Gaeng; and Dimroth, Peter, 3,687,991.
Distler, Harry; Widder, Rudi; Stanger, Bernd; Muellr, Alfred; Druschke, Wolfgang; Mueller, Alfred; and Druschke, Wolfgang, 3,687,886.
Maier, Karl, 3,687,985.
Wisseroth, Karl; Trieschmann, Hans-Georg; Dodel, Peter; Hoehr, Lothar; Herbeck, Rudolf; and Scholl, Richard, 3,687,917.

Baeslack, Gerhard. Electrical wire cutting and stripping tool. 3,686,753, Cl. 30-90.800.

Bagmolet, Claude Comeau; and Reutlingen, Karl-Heinz Digel, to Bosch, Robert, G.m.b.H. Control arrangement for hydraulic systems. 3,686,838, Cl. 56-10.200.

Bagnulo, Luigi. Electrically insulating pipe union. 3,686,747, Cl. 29-508.000.

Bak, Aloysius; and Resh, Roy E., to Bendix Corporation, The. Means for measuring the density of fluid in a conduit. 3,688,188, Cl. 324-58.50c.

Baker, Alfred Dickens: *See—*
Sharpe, John William; and Baker, Alfred Dickens, 3,686,704.

Baker, Philip G.; Cook, Gerald H.; and Downey, Rogers B., to Polaroid Corporation. System for rupturing pod containing processing fluid for photographic material. 3,687,051, Cl. 95-89.00r.

Baldwin, D. H., Company: *See—*
Lampkin, Curt M., 3,688,302.

Ball Brothers Company Incorporated: *See—*
Scholes, Addison B., 3,687,651.

Ballini, Andre: *See—*
Thibaut, Christian; and Ballini, Andre, 3,686,964.

Ballou, Richard P., to Physical Electronics Industries, Inc. Solid state window controls. 3,688,173, Cl. 318-267.000.

Balogh, Edward, Jr.; Cook, Daewen J.; Bube, Carl E.; and Airhart, Robert V., to Burroughs Corporation. Method and apparatus for diagnosing operation of a digital processor. 3,688,263, Cl. 340-172.500.

Baltes, Josef. Process for the selective hydrogenation of fats and fatty acids. 3,687,989, Cl. 260-409.000.

Balz, Werner: *See—*
Hartmann, Job-Werner; Hartmann, Hans Joerg; Schnell, Georg; Falk, Roland; and Balz, Werner, 3,687,725.

Bancroft, George H., to Bendix Corporation, The. Apparatus for preparing oxygen from air. 3,687,634, Cl. 23-281.000.

Bandel, Werner; and Pirot, Ernst, to Bemberg, J. P., Aktiengesellschaft. Apparatus for the continuous treatment of sheet material. 3,687,426, Cl. 263-3.000.

Barber, Anthony Clifford: *See—*
Woolcock, Alan; McDougall, Ian Leich; and Barber, Anthony Clifford, 3,686,750.

Barber, Franklin D., to Standard Car Truck Company. Dampened railway truck bolster. 3,687,086, Cl. 105-197.0db.

Barfield, William G. System for supplying liquids to potted plants. 3,686,792, Cl. 47-39.000.

Barhorst, Ralph E.: *See—*
Chiasson, Wilbert A.; Barhorst, Ralph E.; and Muter, Bryce A., 3,688,180.

Barlow, Jan, Jr.; and Pursell, Herbert P., to International Minerals & Chemical Corporation. Production of finely divided potassium sulfate crystals. 3,687,639, Cl. 23-300.000.

Barnum, Thomas G., to General Motors Corporation. Lights out detector for providing a continuous indication of the failure of lamps which are illuminated intermittently or have intermittent failures. 3,688,297, Cl. 340-251.000.

Barrett, Robert G., to Cablecolor, Inc. Signal balance and control system. 3,688,027, Cl. 178-6.800.

Bartlett, Philip Lee, to Du Pont de Nemours, E. I., and Company. Homopolymers of substituted guanamines. 3,687,900, Cl. 260-67.60c.

Bartoe, Otto E., Jr.; Tucker, Virgil R.; and Wertz, Ronald D. Cableless acoustically linked underwater television system. 3,688,029, Cl. 178-6.800.

Barton, Derek H. R.; and Hesse, Robert H. Fluorination of unsaturated steroids. 3,687,953, Cl. 260-239.550.

Baschant, Robert: *See—*
Scholler, Gerhard; Baschant, Robert; and Hausler, Alfred, 3,686,871.

Basham, Lloyd P. Dual tip fountain pen. 3,687,562, Cl. 401-230.000.

Bassett, Arthur T., Jr., to General Motors Corporation. Compressor protector responsive to low refergerant charge. 3,686,892, Cl. 62-158.000.

Bateman, Coates F.; and Kes, William, to Veeder Industries Inc. Electrical unit for fuel delivery pump. 3,688,291, Cl. 340-203.000.

Bauer, Josef, to Maschinenfabrik Augsburg-Nurnberg Aktiengesellschaft Zweigniederlassung Nurnberg. Conveyor worm for conveying liquids and mud-like substances. 3,687,575, Cl. 417-423.000.

Baum, Hans Eduard, to Allplas A.G. Liquid storage system. 3,687,329, Cl. 220-26.00r.

Baum, Robert E., to Sencore, Inc. Automatic color CRT tracking testor and method of testing. 3,688,184, Cl. 324-20.0cr.

Baumann, Martin: *See—*
Graham, Stephen S.; and Baumann, Martin, 3,687,278.

Baumgartner, Heinrich, to Siemens Aktiengesellschaft. Visual indication device in which a part of the indicated data can be changed. 3,688,272, Cl. 340-172.500.

Bausch & Lomb Incorporated: *See—*
Clark, James A., 3,686,796.
Nothnagle, Paul E.; and Rosenberger, Harold E., 3,687,520.

Baxter Laboratories, Inc.: *See—*
LeMay, William E.; and Glennon, Richard F., 3,687,702.

Baxter, Michael D.: *See—*
Martin, Kenneth C.; Baxter, Michael D.; and Holmes, John F., 3,687,579.

Baxter, Michael David, to Hobourn-Eaton Manufacturing Company Limited. Attachment for cutting rock gear teeth of variable pitch. 3,687,006, Cl. 90-7.000.

Beach, David E., to Eastman Kodak Company. Mechanism for operating a camera shutter and a mechanically operable flash device in synchronism. 3,687,033, Cl. 95-11.50r.

Beadle, Clarence C., Jr., 1/3 to Beadle, Raymond 1/3 to Beadle, Arthur G. 1/3 to Beadle, Arthur G. Football dryer. 3,686,774, Cl. 34-227.000.

Beadle, Raymond 1/3 to Beadle, Arthur G. 1/3 to Beadle, Arthur G.: *See—*
Beadle, Clarence C., Jr., 3,686,774.

Beal, Lawrence E.: *See—*
Fulton, Samuel R.; and Beal, Lawrence E., 3,687,780.

Beauchemin, Norman J.: *See—*
Murphy, William M.; and Beauchemin, Norman J., 3,687,730.

Beaverton, Daniel H.; Hall, Richard H.; and Lange, Clarence E. Removal of organic vapors from gas. 3,636,827, Cl. 55-74.000.

Becker, Gunter E., to Xerox Corporation. Xerographic plate transporting mechanism. 3,687,445, Cl. 271-54.000.

Becker, Stephen A.: *See—*
Karklys, Joseph; and Becker, Stephen A., 3,688,170.

Becker, Warren E.: *See—*
Kobetz, Paul; and Becker, Warren E., 3,687,994.

Beckman Instruments, Inc.: *See—*
Blum, Michael J., 3,688,190.

Becorit Grubenausbau GmbH: *See—*
Dischler, Helmut, 3,687,070.

Bedenk, William T., to Procter & Gamble Company, The. High protein ready-to-eat breakfast cereals containing soy concentrate. 3,687,686, Cl. 99-83.000.

Bedjai, Claude A.; and Antoine, Pierre N. Electronic remote control device utilizing modulated transmission of magnetically recorded signals filtered in a receiver. 3,688,268, Cl. 340-147.00p.

Beer, Palle-Finn, to Aga Aktiebolag. Telemetering system. 3,688,290, Cl. 340-195.000.

Behrenz, Wolfgang: *See—*
Hoffman, Hellmut; Hammann, Ingeborg; and Behrenz, Wolfgang, 3,687,963.

Belden Corporation: *See—*
Spade, Robert L., 3,688,016.

Belenky, Alexandr Mikhailovich: *See—*
Paton, Boris Evgenievich; Medovar, Boris Ezrailevich; Chekotilo, Leonty Vasilievich; Pavlov, Leonid Viktorovich; Ariamonov, Viktor Leonidovich; Borisovich, Kiev, Alexandr; Kamensky, Leonid Alexeevich; Ishunkin, Veniamin Alexandrovich; Belenky, Alexandr Mikailovich; Shevisov, Anatoly Ivanovich; Grinsnpon, Semen Yakovlevich; Sysenko, Anatoly Pavovich; Dubinsky, Rudolf Solomonovich; Papav, Valery Georgievich; and Toschev, Alexandr Mikhaivich, 3,687,188.

Beletsky, Naum Iosifovich; and Chepovetsky, Mikhail Lvovich, to Vsesojuzny Proektno-Konstruktorsky Institut Svarochnogo Proizvodstva. Automatic rotary-swaging machine for reducing metal-wire parts. 3,686,912, Cl. 72-70.000.

Belknap, Charles B.; and Drum, James R., to Hon Industries Inc. Followers for filing units. 3,687,326, Cl. 220-22.300.

Bell, Alan, to Foster Wheeler Corporation. Steam boilers. 3,687,115, Cl. 122-4.00d.

Bell, Gunter, to Klockner-Werke AG. Cap pull for a mining frame prop of an advancing pit support. 3,686,874, Cl. 61-45.00d.

Bell, Lon E., to Technor Incorporated. Crash sensing switch. 3,688,063, Cl. 200-61.530.

Bell Telephone Laboratories, Incorporated: *See—*
Chang, Chuas Chung; Marcus, Robert Boris; and Wagner, Richard Siegfried, 3,687,745.
Freund, Isaac; and Levine, Barry F., 3,688,124.
Miller, Stewart Edward; and Personick, Stewart David, 3,687,514.
Montgomery, William Lloyd, 3,688,097.
Morris, Joel Morton, 3,688,047.

Bellan, Heinrich: *See—*
Eggemmuller, Alfred; Scherer, Lorenz; Notter, Eugen; Bellan, Heinrich; and Wagler, Werner, 3,687,061.

Beller, Hans: *See—*
Klein, Hans-Christof; Beller, Hans; and Schrader, Gert, 3,688,255.

Beloit Corporation: *See—*
Pfeiffer, John D., 3,687,388.
Prew, Stanley R.; and Clark, Llewelyn E., 3,687,360.

Bemberg, J. P., Aktiengesellschaft: *See—*
Bandel, Werner; and Pirot, Ernst, 3,687,426.

Bendix Corporation, The: *See—*
Bak, Aloysius; and Resh, Roy E., 3,688,188.
Bancroft, George H., 3,687,634.
Gripe, Maxwell L., 3,686,861.
Shutt, Paul B., 3,686,864.

Beneke, Jene Arnold, to Verson Manufacturing Company. Plural speed transmission system. 3,686,967, Cl. 74-388.00r.

Bennett, Thomas M.: *See—*
Sze, Morgan C.; Unger, Harold; and Bennett, Thomas M., 3,687,840.

Bennett, William C.; Condon, David C.; and Brink, Rodney O., to Novar Corporation. Digital data recording and reproducing system. 3,688,286, Cl. 340-174.01g.

Berg, Peter G., to Texas Instruments, Incorporated. Thermal actuator. 3,686,857, Cl. 60-23.000.

Berger, Allen: *See—*
Stiener, Kurt; and Berger, Allen, 3,688,074.

Beringer-Hydraulik R. Beringer & Co.: *See—*
Haussler, Hubert, 3,687,011.

Berkstresser, William E., to Web Mercantile Corporation. Pendant for flea prevention and pendant for flea compound. 3,687,114, Cl. 119-106.000.

Berlinski, Anton; and Berlinski, Ruth R. Water ski safety cap. 3,686,689, Cl. 2-2.000.

Berlinski, Ruth R.: *See—*
Berlinski, Anton; and Berlinski, Ruth R., 3,686,689.

Bernstein, Edith; Garmaise, David Lyon; and Plotnikoff, Nicholas Peter, to Abbott Laboratories. 8-Fluoro-2-substituted-gamma-carboline. 3,687,960, Cl. 260-295.00s.

Bernstein, Edith; Garmaise, David Lyon; and Plotnikoff, Nicholas Peter, to Abbott Laboratories. 8-Fluoro-2-(3-(4-fluorophenylanilino) porpyl)-gamma-carboline. 3,687,961, Cl. 260-296.00a.

Berry Systems Incorporated: *See—*
Delahunt, R. E., 3,687,340.

Berthelemy, Jacques: *See—*
Sauvan, Jacques Louis; and Berthelemy, Jacques, 3,688,278.

Berthier, J., Laboratories S.A.: *See—*
Dardas, Anastasios, 3,687,953.

Bethlehem Steel Corporation: *See—*
Humphries, Darral V., 3,687,798.

Bettcher Industries, Inc.: *See—*
Bettcher, Louis A., 3,687,067.

Bettcher, Louis A., to Bettcher Industries, Inc. Food press. 3,687,067, Cl. 100u218.000.

Beuschel, Helmut, to Dynamit Nobel Aktiengesellschaft. Ballistic missile. 3,687,398, Cl. 244-3.240.

Bickel, David P.: *See—*
Tsoras, John; Davis, Melvin H.; Bickel, David P.; and Starks, Karl H., Jr., 3,688,295.

Bieber, Herman; Spenade, Lawrence; and Coddington, David M., to Esso Research and Engineering Company. Rocket propellant system. 3,687,746, Cl. 149-19.000.

Biernat, Raymond W.: *See—*
Morley, Ronald I.; Biernat, Raymond W.; and Smidt-Hayer, Arnold J., 3,688,112.

Biletsky, Semen Mikhailovich: *See—*
Dyskin, Ernest Matveevich; Raevsky, Georgy Vladimirovich; Biletsky, Semen Mikhailovich; Burmenko, Eduard Jurievich; Grosman, Erikh Ruvimovich; Satanovsky, Abram Lazarevich; Kremnev, Oleg Alexandrovich; Zhuravlenko, Viktor Yakovlevich; and Protsyshin, BorisNikolaevich, 3,687,434.

Biller, Theodor: *See—*
Ries, Karl; Wimmer, Helmut; and Biller, Theodor, 3,686,932.

Binckley, Earle T. Automotive safety side wind indicator. 3,686,938, Cl. 73-189.000.

Bini, Dante. Expandible reinforcement structure for inflatable doors. 3,686,818, Cl. 52-646.000.

Bio-Controls, Inc., mesne: *See—*
Van Den Bovenkamp, Gustaaf J., 3,687,806.

Bio-Med Research Corporation: *See—*
Krchnavi, John; and Leech, William D., 3,687,680.

Birdsboro Corporation: *See—*
Chatterjee, Ranjit K., 3,686,918.

Birger, Pettersson, to Svenska Rotor Maskiner Aktiebolag. Regenerative heat exchangers. 3,687,192, Cl. 165-8.000.

Bishop, Ernest M., to Hexcel Corporation. Silane-titanate dispersions for coating aluminu. 3,687,882, Cl. 260-29.20m.

Bissett, Thomas B.: *See—*
Donohue, Thomas W.; Murphy, John Brian; and Bissett, Thomas B., 3,688,296.

Bissett-Berman Corporation, The: *See—*
Donohue, Thomas W.; Murphy, John Brian; and Bissett, Thomas B., 3,688,296.

Bittorf, Hannjoerg: *See—*
Heynisch, Hinrich; and Bittorf, Hannjoerg, 3,688,152.

Bjork, Bengt Anders, to Domkraft AB Nike. Automatic cushioning valve. 3,687,417, Cl. 254-93.00r.

Bjorklund, Elmer G., to Clark Equipment Company. Power assisted clutch. 3,687,253, Cl. 192-91.00a.

Blaine, Harlan P. Method and apparatus for exercising the oculomotor accommodation mechanism of the eyes. 3,687,527, Cl. 351-39.000.

Blanchard, Robert R.: *See—*
Kropscott, Earle L.; Blanchard, Robert R.; and Schramm, James N., 3,687,873.

Blanco, Antonio Lopez, to Europote S.A. Process for coating paper by moulding. 3,687,711, Cl. 117-64.00c.

Blancquart, Pierre, to Societe a Responsabilite Limitee Doittan Products. Method of applying a thermal insulating coating to an ingor wall. 3,687,700, Cl. 117-5.100.

Bland, George F. Binary data transmission system and clocking means therefor. 3,688,036, Cl. 178-68.000.

Blase, Emil F.: *See—*
Willy, John Robert; and Blase, Emil F., 3,688,162.

Blecher, Alfred: *See—*
Rink, Wilhelm; and Blecher, Alfred, 3,686,824.

Bley, Erich. Combination manual and hydraulic arbor press. 3,686,922, Cl. 72-441.000.

Bloch, Paul, to La Telephonic Industrielle et Commerciale "Telic". Miniature electromagnetic relay. 3,688,229, Cl. 335-151.000.

Block, Fred B.; and Schroder, Arthur H. 1-Oxygenated-6-acyl-1,2,3,4,5,6-hexohydro-2, 6-methano-3-benzucines. 3,687,957, Cl. 260-293.540.

Blomberg, Erling G. E. Arrangement in flexible fences for enclosing impurities floating on water. 3,686,870, Cl. 61-1.00f.

Bloom, Albert, to Industrial Dyestuff Company. Diazo-oxides of sulfonic acid amides and/or esters and photographic element and use thereof. 3,687,663, Cl. 96-33.000.

Bloom, Stanley Morton, to Polaroid Corporation. Plastic optical elements. 3,687,862, Cl. 252-300.000.

Blount, Walter H., to Midland-Ross Corporation. Bleeding seal. 3,686,866, Cl. 60-54.60r.

Blum, Michael J., to Beckman Instruments, Inc. Differential capacitance circuitry for differential pressure measuring instruments. 3,688,190, Cl. 324-61.00r.

Boaz, Virgil L.; and Moore, Harold R., to Westinghouse Electric Corporation. Electrical inductive apparatus having serially interconnected windings. 3,688,236, Cl. 336-187.000.

Bobbitt Laboratories: *See—*
Krieger, Robert G., Sr., 3,688,008.

Bobenheim-Roxheim, Manfred Gaeng; and Dimroth, Peter, to Badische Anilin- & Soda-Fabrik Aktiengesellschaft. Azomethine metal complex dyes. 3,687,991, Cl. 260-429.00c.

Boberg, John E., to Lockheed Aircraft Corporation. Air outlet apparatus. 3,687,054, Cl. 98-33.000.

Bode, Charles H., Jr., to United States Steel Corporation. Protective device for conveyors. 3,687,433, Cl. 266-23.00r.

Bodine, Albert G. Sonic method and apparatus for installing off-shore caissons for oil operations and the like. 3,686,877, Cl. 61-63.500.

Bodine, Charles M.: *See—*
Enderbrock, Edward N.; and Bodine, Charles M., 3,687,546.

Boedecker, Manfred: *See—*
Kuhn, Konrad; and Boedecker, Manfred, 3,687,297.

Boeing Company, The: *See—*
Fitzgerald, John M.; and James, Varnell L., 3,687,400.
Miller, Charles C.; and Rumberger, William E., 3,686,926.

Bogachenko, Alexei Georgievich: *See—*
Zuev, Ivan Mikhailovich; Gorsky, Anatoly Vasilievich; Medovar, Boris Izrailevich; Anenko, July Georgievich Emely; Latashi, Jury Vadimovich; and Bogachenko, Alexei Georgievich, 3,687,189.

Bogdanowicz, Mitchell J. Cartridge for continuous loop film. 3,687,531, Cl. 352-72.000.

Bollinger, Frederic G.; and D'Amico, John J., to Monsanto Company. Trifluoromethylbenzyl thiolcarbamates as herbicides. 3,687,653, Cl. 71-94.000.

Bolt Beranek and Newman Inc.: *See—*
Scharton, Terry D., 3,686,927.

Bongers, Hendrikus Johannus, to Siempelkamp, G., & Co. Apparatus for making conveyor belts. 3,687,788, Cl. 156-510.000.

Bonnard, Michel Paul Rene. Sound reproduction acoustic enclosure. 3,687,221, Cl. 181-31.00b.

Bonnefont, Michel: *See—*
Ferrand, Andre; and Bonnefont, Michel, 3,688,078.

Boocock, David: *See—*
Newman, Michael; and Boocock, David, 3,687,085.

Borcoman, Mircea: *See—*
Borcoman, Mircea; and Ciufu, Virgil (said Ciufu assor. to), 3,687,144.

Borcoman, Mircea; and Ciufu, Virgil, said Ciufu assor. to Borcoman, Mircea. Installation for the treatment, by immersion in a liquid, of parts or of materials, especially for the heat treatment of prefabricated concrete. 3,687,144, Cl. 134-79.000.

Borden Company, The: *See—*
Messervey, Clifford H., 3,687,285.

Borelli, Ronald F.; Despres, Daniel C.; and Garand, Donald J., to Honeywell, Inc. Printing system. 3,687,107, Cl. 118-637.000.

Borg-Warner Corporation: *See—*
Hendry, James W.; Kimball, Jack E.; and Chin, Charles L. D., 3,687,582.
Tuzson, John J., 3,687,121.
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Bosch, Juan Casso; and Clua, Jorge Borguno. Hearing aid including microphone suspended externally of component-containing housing. 3,688,053, Cl. 179-107.00e.

Bosch, Robert, G.m.b.H.: *See—*
Bagmolet, Claude Comeau; and Reutlingen, Karl-Heinz Digel, 3,686,838.
Daumuller, Hans, 3,688,103.
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Bottenbruch, Ludwig: *See—*
Vernaleken, Hugo; Malamet, Georg; Bottenbruch, Ludwig; Krimm, Heinrich; and Schnell, Hermann, 3,687,895.

Bough, Dale E.: *See—*
White, Hollis N., Jr.; and Bough, Dale E., 3,687,578.

Bourgeaux, Maurice, to Compagnie de Saint-Gobain. Method for the surface treatment of glass. 3,687,649, Cl. 65-30.000.

Bournez, Lucien. Apparatus for handling rolls of thin metal strips. 3,687,391, Cl. 242-79.000.

Bouwers, Albert, to N.V. Optische Industrie de Oude Delft. Image amplifier having external electric static shield. 3,688,146, Cl. 313-102.000.

Bowles Fluidics Corporation: *See—*
Bowles, Romand E.; and Stouffer, Ronald D., 3,687,147.
Proctor, Edward D., 3,687,173.

Bowles, Romand E.; and Stouffer, Ronald D., to Bowles Fluidics Corporation. Jet velocity augmentation apparatus. 3,687,147, Cl. 137-1.000.

Bowman, Edward L., to Phillips Petroleum Company. Zinc-containing polymer compositions. 3,687,880, Cl. 260-23.70m.

Boylan, Thomas E., to Norcross, Inc. Display rack. 3,687,091, Cl. 108-60.000.

Bozoyan, Edward. Digital control devices with mechanical conversion. 3,686,970, Cl. 74-479.000.

Brady, Hugh B.; Kochis, John L.; and Tischler, Oscar, to Pyrofilm Corporation. Hermetically sealed metal-film resistor. 3,688,238, Cl. 338-237.000.

Brain, Thomas John Stirrat, to National Research Development Corporation. Measuring the density, velocity and mass flow of gases. 3,688,106, Cl. 250-43.5fc.

Brasier, Robert I.: *See—*
Mills, Carroll B.; and Brasier, Robert I., 3,687,804.

Braunhut, Harold N. Insect trap. 3,686,788, Cl. 43-110.000.

Braunhut, Harold N. Insect activity observation center. 3,687,110, Cl. 119-1.000.

Braunschweig, Robert G.: *See—*
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Brehmer, Harald: *See—*
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Breitwieser, Heinz; and Heinz, Otto, to Farbwerke Hoechst Aktiengesellschaft vormals Meister Lucius & Bruning. Wall covering defining a continuous ventilating conduit. 3,686,813, Cl. 52-303.000.

Brent, Albert; and Teichmann, Charles F., to Texaco Development Corporation. Sewage disposal process. 3,687,646, Cl. 48-209.000.

Breslow, Jeffrey D., to Glass, Marvin, & Associates. Game device. 3,687,451, Cl. 273-1.00r.

Breston, Michael P.: *See—*
Schmitt, Arthur N., 3,688,183.

Breunich, Theodore R.: *See—*
DiNoia, Emanuel J.; Klatte, Henry B.; and Breunich, Theodore R., 3,686,708.

Bricker, Carl E., to Goodyear Tire & Rubber Company, The. Cloverleaf brake structure. 3,687,240, Cl. 188-71.100.

Bricker, Carl E.; and Hillegass, Kenneth P., to Goodyear Tire & Rubber Company, The. Floating lining high torque brake assembly. 3,687,247, Cl. 188-335.000.

Briggin, Edward: *See—*
Katzman, Lawrence; and Briggin, Edward, 3,687,424.

Bright, Elvin M. Finely molded decorative and structural articles. 3,687,793, Cl. 161-5.000.

Brink, Rodney O.: *See—*
Bennett, William C.; Condon, David C.; and Brink, Rodney O., 3,688,286.

Brint, Norman Trevor. Sliding breech block mechanism. 3,687,001, Cl. 89-24.000.

Bristol-Myers Company: *See—*
Crast, Leonard Bruce, Jr., 3,687,948.
Holdrege, Charles Truman, 3,687,949.

British Railways Board: *See—*
Newman, Michael; and Boocock, David, 3,687,085.
Paterson, Archibald, 3,687,366.

Britt, James L.; and Hewitt, Robert E., to Xerox Corporation. Conveyor assembly. 3,687,270, Cl. 198-140.000.

Broadbent, Kent D., to Gauss Electrophysics, Inc. Duplicating process for video disc records. 3,687,664, Cl. 96-35.100.

Brobeck, William M.: *See—*
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Brockman, John J.: *See—*
Salihi, Jalal I.; Brockman, John J.; and Spix, George J., 3,688,171.

Brodnicki, Anthony F., to Ny Met Industries, Inc. Strap system for material handling. 3,686,715, Cl. 24-68.0cd.

Bromwich, Robert A. C.: *See—*
Hill, William G.; and Bromwich, Robert A. C., 3,688,076.

Broser, Richard, to Accum-Matic Systems, Inc. Automatic accumulating work piece lift and carry transfer mechanism. 3,687,275, Cl. 198-219.000.

Brouwer, Abraham; and Van Loom, Gerardus M. A. M., to Melkcentrale Gouda N.V. Process of isolating native albumin and/or globulin from an aqueous system comprising raising the pH to above 8.5 and then lowering the pH to the isoelectric point to precipitateprotein. 3,687,928, Cl. 260-122.000.

Brown, Carl R.: *See—*
Mueller, Leonard E., 3,687,217.

Brown, Ced F., 1/2 to Torosian, Mike. Conveying systems for automobiles and the like. 3,687,083, Cl. 104-155.000.

Brown, D. S., Company, The: *See—*
Brown, Delmont D., 3,687,022.

Brown, Dale M.: *See—*
Engeler, William E.; and Brown, Dale M., 3,686,748.

Brown, Delmont D., to Brown, D. S., Company, The. Bridge joint seals. 3,687,022, Cl. 94-18.000.

Brown, Donald W. Conveyor for building materials. 3,687,268, Cl. 198-85.000.

Brown, Henry; and Tomaszewski, Thaddeus W., to Udylite Corporation. Electrodeposition of films of particles on cathodes. 3,687,824, Cl. 204-40.000.

Brown, James D.: *See—*
Mueller, Francis X., Jr.; and Brown, James D., 3,687,916.

Brown, William F.; and Goetchius, Ronald J., to Texaco Inc. Credit card validation system using an opaque card having translucent coded areas. 3,688,088, Cl. 235-61.12r.

Browne, Laurence A. System and apparatus for storing packages. 3,686,804, Cl. 52-31.000.

Bruce, Peter. Scour control system for submerged structures. 3,686,887, Cl. 61-63.000.

Brumlik, George C. Self-gripping fastening device. 3,686,718, Cl. 24-204.000.

Brun, Henri, to Thomson-CSF. Doppler effect frequency monitoring system. 3,687,517, Cl. 356-28.000.

Bruno Vogel: *See—*
Schweigert, Luitpold, 3,687,378.

Brunot, William Turner: *See—*
Jonannes, Adrianus; and Hoogeboom, Theodorus, 3,687,119.

Brusa, Ugo. Control and adjustment assembly for rolling mill cages. 3,686,919, Cl. 72-249.000.

Bruschweiler, Fred: *See—*
Pettit, George R.; Houghton, Leonard E.; Knight, John C.; and Bruschweiler, Fred, 3,687,944.

Bube, Carl E.: *See—*
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Grider, Lyle D.; Hornagold, John T.; and Rathi, Ram N., 3,686,862.

Buhrer, Carl F., to General Telephone & Electronics Laboratories, Incorporated. Magneto-optical magnetic field polarity sensor. 3,688,282, Cl. 340-174.0tf.

Bull, Victor Edward. Cable stripping tool. 3,686,982, Cl. 81-9.50r.

Bulldog Lacing Limited: *See—*
Thomson, George A., 3,686,738.

Bulmash, William I.: *See—*
Colinet, Rene D.; and Bulmash, William I., 3,686,987.

Bunchez, Samuel H. Method for treating photographic film. 3,687,710, Cl. 117-64.000.

Burger, Erich. Circuit arrangement for the compensation of the direct current voltage disturbance component occuring in the demodulation of frequency-re-scanned. 3,688,205, Cl. 329-132.000.

Burgess-Norton Mfg., Co.: *See—*
Waller, Gustav M., 3,687,647.

Burke, Howard B., Jr., to Avco Corporation. Automatic electric power supply and speed control system for automated driverless vehicles. 3,687,082, Cl. 104-152.000.

Burklin, Max: *See—*
Kirn, Manfred; Hettich, Alfred; Hahner, Reinhard; Stroezel, Reinhold; and Burklin, Max, 3,686,957.

Burlando, Antonio; and Bosco, Silvio. Automatic vending machine with horizontal arrangement. 3,687,337, Cl. 221-129.000.

Burmenko, Eduard Jurievich: *See—*
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Burnett, Edward L.; and Stack, Eugene V., to Dow Chemical Company, The. Pressure vessel sealing structure. 3,687,333, Cl. 220-46.00p.

Burns, Clence L., to Motorola, Inc. Conducted noise rectifying filter. 3,688,179, Cl. 321-10.000.

Burroughs Corporation: *See—*
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Holz, George E., 3,687,513.
Narang, Chander K., 3,688,273.
Paige, Walter Griffin, 3,687,361.

Busby, Howard G. T., to Lodge-Cottrell Limited. Electro-precipitation. 3,686,825, Cl. 55-5.000.

Busch, John F.: *See—*
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Buscher, Richard G., to Lear Siegler, Inc. Automatic control system with a digital computer. 3,688,099, Cl. 235-153.000.

Bush, William P.: *See—*
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Busti, Benito: *See—*
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Butler, Louis L. Optical wheel balancer. 3,686,955, Cl. 73-457.000.

Butler, Louise; Dobkin, Lloyd; and Ellner, J. Robert. Merchandise display device. 3,687,090, Cl. 108-6.000.

Butter, Stephen A.: *See—*
Chen, Albert C.; Butter, Stephen A.; and Hobson, Richard W., 3,687,988.

B.V.S., Grenoble: *See—*
Thillet, Georges, 3,686,743.

Byers, John E.: *See—*
Byers, John E.; and Claussen, Wells H. (said Claussen assor. to said), 3,687,565.

Byers, John E.; and Claussen, Wells H., said Claussen assor. to said Byers, John E. Drill bit device. 3,687,565, Cl. 408-201.000.

Byrd, Carlisle O., Jr. Furnace wall construction. 3,687,093, Cl. 110-1.00a.

Byrne, Joseph J., to Monsanto Research Corporation. Guanidine and lithium perchesrote salts and eutectics. 3,687,747, Cl. 149-77.000.

Bystrom, Roy H. Centrifugal clutch. 3,687,254, Cl. 192-105.00a.

C & M Manufacturing Company, Inc.: *See—*
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Cablecolor, Inc.: *See—*
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Comte, Georges N., 3,687,782.
Cadillac Products, Inc.: *See—*
Anton, Wink; and Williams, Robert J., 3,687,358.
Cala, James S. Fishing rod holder. 3,687,405, Cl. 248-44.000.
Calaway, Ward M., to Burroughs Corporation. Phase detector for oscillator synchronization. 3,688,211, Cl. 331-1.00a.
Calaway, Ward M., to Burroughs Corporation. Signal-controlled oscillator constant amplitude variable frequency multivibrator. 3,688,213, Cl. 331-8.000.
Calhoun, Hugh C., Jr. Sign or display device. 3,686,781, Cl. 40-137.000.
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Call, Charles G.: *See—*
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Calundann, Gordon W., to Celanese Corporation. Acrylonitrile polymerization. 3,687,918, Cl. 260-85.5es.
Camboulives, Abdre Alphonse Mederic Leon; Delonge, Jean-Claude Lucien; Cesson, Theophile Francois Le Maout; and Vandenbroucke, Alfred Jjles, to Societe Nationale d'Etude et de Construction de Moteurs d'Aviation. Device for damping the noise produced by a gs jet escaping from a duct. 3,687,222, Cl. 181-33.0hc.
Camon Kabushiki Kaisha: *See—*
Goshima, Takeshi; Ohta, Shoji; and Imai, Nobuhiro, 3,687,395.
Campbell, Charles: *See—*
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Campbell, David D., to General Motors Corporation. Occupant restraint system. 3,687,485, Cl. 280-150.0ab.
Campbell, Lyman L.; and Kulig, Constantine W. Article handling apparatus. 3,687,262, Cl. 198-31.0aa.
Campbell, Robert W., to General Motors Corporation. Starting mechanism. 3,686,961, Cl. 74-7.00r.
Campbell Soup Company: *See—*
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Canadian Brass Limited: *See—*
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Canadian Fina Oil Limited: *See—*
Redford, David Arthur, 3,687,197.
Candor, James T. Method and apparatus for removing particles from fluid containing the same. 3,687,834, Cl. 204-186.000.
Cane, Philip, to Marbelite Company, Inc., The. Traffic control system. 3,688,253, Cl. 340-31.00r.
Canon Kabushiki Kaisha: *See—*
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Komiya, Takao; Tosaka, Umi; Ihara, Takashi; Matsuo, Takehiko; and Ohara, Katsunobu, 3,687,659.
Mizui, Seiichiro; and Takishima, Yoshiyuki, 3,687,042.
Capper, Harry Milton; and Wagner, Richard Maxwell, to AMP Incorporated. Strip processing apparatus having air locks between tanks. 3,687,104, Cl. 118-405.000.
Capra, Uberto. Electrohydraulic hoist with mechanical backstop. 3,687,237, Cl. 187-73.000.
Caputo, William R., to Westinghouse Electric Corporation. Elevator control device. 3,687,236, Cl. 187-29.00r.
Carborundum Company, The: *See—*
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Carlough, Warren A.: *See—*
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Carlson, Heinz F.; Isaac, George L.; and Mosely, Graham H., to Signetics Corporation. Method and apparatus for aligning and breaking wafers. 3,687,345, Cl. 225-1.000.
Carlson, Richard D.: *See—*
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Carmody, Dewey Blaine, to Lee, Raymond, Organization, Inc., The. Bandage. 3,687,136, Cl. 128-156.000.
Carolina Narrow Fabric Company: *See—*
Nisbet, John L.; and Woodall, Hubert C., Jr., 3,686,725.
Carpenter, Robert K.; and Pagel, Richard F., to American Zinc Company. Recovery of metal values. 3,687,828, Cl. 204-119.000.
Carpenter, Walter C. Locking wheel chocks for vehicles. 3,687,238, Cl. 188-32.000.
Carr, David E.: *See—*
Diamond, Arthur S.; and Carr, David E., 3,687,822.
Carruth, Henry Thomas, Jr., to Chevron Research Company. Repetitive low energy seismic source system controlled by digital timing means. 3,687,229, Cl. 181-.5xc.
Carter, Douglas Vaughan, to Avon Rubber Company Limited. Therapeutic device. 3,687,293, Cl. 210-321.000.
Carter, Robert: *See—*
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Carter, William C.; Henle, Robert A.; Jessep, Donald C., Jr.; and Wadia, Aspi B., to International Business Machines Corporation. Error-free decoding for failure-tolerant memories. 3,688,265, Cl. 340-146.1al.
Cartwright, Andrew John; Cartwright, Frederick Timothy; and Cartwright, Peter Charles. Welding. 3,688,080, Cl. 219-137.000.
Cartwright, Frederick Timothy: *See—*
Cartwright, Andrew John; Cartwright, Frederick Timothy; and Cartwright, Peter Charles, 3,688,080.
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Case, Derek Frank; and Stammers, Kenneth, to International Computers Limited. Methods of bonding ferrite components. 3,687,650, Cl. 65-45.000.
Case Western Reserve University: *See—*
Miraldi, Floro D., 3,688,113.
Casey, Norris A.; and Ivy, James R. Motorcycle mount for automobile bodies. 3,687,318, Cl. 214-450.000.
Castro, Manuel A. Machine for forming tied stacks of bales. 3,687,302, Cl. 214-6.00b.
Caterpillar Tractor Company: *See—*
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Moser, Raymond L.; Oldenburg, Dorrance; and Sunderlin, Donald E., 3,687,023.
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Celanese Corporation: *See—*
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Centre Stephanois de Recherches Mecaniques Hydromecanique et Frottement: *See—*
Michalon, Daniel, 3,687,180.
Cerbati, Guido; and Turbanti, Luigi. Tropine esters of 2-phenyl-4-pentynbic acid. 3,687,955, Cl. 260-292.000.
Cesare, Frank C.: *See—*
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Cesson, Theophile Francois Le Maout: *See—*
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White, Albert H., 3,686,860.
Chang, Chuas Chung; Marcus, Robert Boris; and Wagner, Richard Siegfried, to Bell Telephone Laboratories, Incorporated. Light-sensitive storage device including diode array and method for producing the array. 3,687,745, Cl. 148-187.000.
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Chao, Stanley K., to Data Electronics Corporation. Ring core keyboard entry device. 3,688,307, Cl. 340-365.000.
Charle, Roger; Zviak, Charles; and Kalopissis, Gregoire, to Societe anonyme dite: L'Oreal. Cosmetic composition containing microencapsulated solvents for nail enamel. 3,686,701, Cl. 15-104.930.
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Charneski, Mitchell D., to Detroit Edison Company, The. Electric broiler heating unit. 3,688,084, Cl. 219-537.000.
Chase, Marston S. Picture mat and mount method and article. 3,687,770, Cl. 156-221.000.
Chase, Michael John; and Smith, Derek Anthony, to Imperial Metal Industries (Kynoch) Limited. Rocket motors. 3,686,868, Cl. 60-200.00a.
Chatard, Michel; and Reynard, Remi, to Institut Francais du Petrole, des Carburomits et Lubrifiants. Drilling column comprising a device for measuring stresses exerted on the column. 3,686,942, Cl. 73-151.000.
Chatterjee, Ranjit K., to Birdsboro Corporation. Vernier adjustment for a pinion stand and the like. 3,686,918, Cl. 72-198.000.
Chavarria, Melchor J. Hydraulic lift for automotive vehicles. 3,687,015, Cl. 92-53.000.
Chekotilo, Leonty Vasilievich: *See—*
Paton, Boris Evgenievich; Medovar, Boris Ezrailevich; Chekotilo, Leonty Vasilievich; Pavlov, Leonid Viktorovich; Ariamonov, Viktor Leonidovich; Borisovich, Kiev, Alexandr; Kamensky, Leonid Alexeevich; Ishunkin, Veniamin Alexandrovich; Belenky, Alexandr Mikailovich; Shevisov, Anatoly Ivanovich; Grinsnpon, Semen Yakovlevich; Sysenko, Anatoly Pavovich; Dubinsky, Rudolf Solomonovich; Papav, Valery Georgievich; and Toschev, Alexandr Mikhaivich, 3,687,188.
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Chen, Albert C.; Butter, Stephen A.; and Hobson, Richard W., to Mobil Oil Corporation. Reaction of acetic acid derivatives with ethylene. 3,687,988, Cl. 260-398.000.
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Chiasson, Wilbert A.; Barhorst, Ralph E.; and Muter, Bryce A., to Hobart Brothers Company. Welding apparatus. 3,688,180, Cl. 321-21.000.
Chicago Bridge & Iron Company: *See—*
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Chin, Charles L. D.: *See—*
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Christoffel, Julius M.; and Phillips, Lester F., to Gayla Industries, Inc. Kite. 3,687,402, Cl. 244-153.00r.
Christopher, Todd J., to RCA Corporation. Astable multivibrator circuit with means for insuring proper starting of oscillations. 3,688,154, Cl. 315-27.0td.
Christopherson, Rollin F.: *See—*
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Christy Metal Products Inc.: *See—*
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Weis, Claus Dieter; and Rochat, Alain Claude, 3,687,996.
Cichoski, Sylvester A.; Damon, Paul H.; Golembeski, Ronald J.; and Lawler, William P., to United States Steel Corporation. Apparatus for the wiping transfer of bonding agent onto a longitudinal member and an underlapping margin of a tape on the longitudina member. 3,687,778, Cl. 156-392.000.
Cincinnati Gilbert Machine Tool Company, The: *See—*
Petri, William Edward, Jr.; and Froese, Richard Joseph, 3,686,979.
Cities Service Company: *See—*
Clausen, Herbert J., 3,687,618.
Cities Service Oil Company: *See—*
Hearn, Charles L.; and Relph, James L., 3,687,198.
Remick, Karl F., 3,687,428.
Citrin, Paul Stuart; and Gurski, Frank Joseph, Jr., to Sieburg Industries Incorporated. Method and apparatus for cleaning capillary sized holes in articles. 3,687,731, Cl. 134-22.00r.
Ciufu, Virgil: *See—*
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Claps, William A., to Coulter Electronics Inc. Electronic particle study apparatus with fluid circulating system. 3,688,191, Cl. 324-71.0cp.
Clar, Milton, to Auto Pak Company. Apparatus for compacting material into drums or bags. 3,687,063, Cl. 100-98.000.
Clare, C. P., & Company: *See—*
Koda, Arthur J.; and Riedel, Charles E., 3,688,135.
Clark, Adrian Percy, to Plessey Telecommunications Research Limited. Code division multiplex system. 3,688,048, Cl. 179-15.0bw.
Clark Equipment Company: *See—*
Bjorklund, Elmer G., 3,687,253.
Cosby, Henry L., 3,687,484.
Clark, James A., to Bausch & Lomb Incorporated. Multiple head lens processing machine. 3,686,796, Cl. 51-3.000.
Clark, Llewelyn E.: *See—*
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Clark, Willard; and Campbell, Charles, to Maul Bros., Inc. Beet take-up apparatus. 3,687,274, Cl. 198-208.000.
Clark, William Van Alan, Jr.: *See—*
Vaitses, Allan Holmes; and Clark, William Van Alan, Jr., 3,687,768.
Clarke, James A., to Dow Chemical Company, The. Preparation of oxazolidiones by reacting an isocyanate, or isothiocyanate with an epoxide in the presence of phosphosium halide, acid, ester, acid ester of the elements. 3,687,897, Cl. 260-59.000.
Clarkson, Robert J.: *See—*
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Clausen, Herbert J., to Cities Service Company. Recovery of ammonia from exit gases of an ammonium polyphosphate plant. 3,687,618, Cl. 423-314.0on.
Claussen, Wells H.: *See—*
Byers, John E.; and Claussen, Wells H., 3,687,565.
Clayton, Alfred L.: *See—*
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Cless, Gerhard, to Teletype Corporation. Teleprinter type selection and assembly therefor. 3,688,035, Cl. 178-33.000.
Clock, Gerald E.; Mildner, Raymond C.; and Walters, Harold A., to Dow Chemical Company, The. Method of fabricating cables. 3,687,748, Cl. 156-56.000.
Clua, Jorge Borguno: *See—*
Bosch, Juan Casso; and Clua, Jorge Borguno, 3,688,053.
Cochran, Burton L., to Warner & Swasey Company, The. Cutoff or grooving tool and holder therefor. 3,686,729, Cl. 29-96.000.
Cochran, Gary D.; Cutrona, Louis J.; and Ingalls, Arthur L., to Conductron Corporation. Optical data processor. 3,687,543, Cl. 355-52.000.
Coddington, David M.: *See—*
Bieber, Herman; Spenade, Lawrence; and Coddington, David M., 3,687,746.
Cohen, Hyman L., to Eastman Kodak Company. Non-wandering hardening compounds and their use. 3,687,698, Cl. 106-125.000.
Cohn, Seymour B., to United States of America, Army, mesne. Slot line. 3,688,225, Cl. 333-73.000.
Colclough, Terence; Morris, Arthur L.; and Hodges, Robert J., to Esso Research and Engineering Company. Lubricating oil compositions. 3,687,848, Cl. 252-32.70e.
Coles, Donald K. Light detector having wedge-shaped photo cathode and accelerating grid structure. 3,688,145, Cl. 313-102.000.
Colgate-Palmolive Company: *See—*
Natali, Remigio; and Giombini, Giuseppe, 3,687,853.
Colinet, Rene D.; and Bulmash, William I., to Industrial Research Laboratory, Inc. Machine for and process of diecutting. 3,686,987, Cl. 83-37.000.
Collings, William G.; Cianciarulo, Anthony N.; and Shen, Kwan-Tin, to Ciba Corporation. Composition of a liquid epoxy resin, a polyhydroxyl material and a hardener. 3,687,894, Cl. 260-47.0ec.
Colln, Reimer, to Farbenfabriken Bayer Aktiengesellschaft. Process for the preparation of N-(4-chlorophenyl thiomethyl)-phthalimide. 3,687,974, Cl. 260-326.00s.
Colton, Frank B.; Marsheck, William J.; and Miyano, Masateru, to Searle, G. D., & Co. Microbiological reduction of 15-keto prostaglandin derivatives. 3,687,811, Cl. 195-30.000.
Columbia Broadcasting System, Inc.: *See—*
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Columbian Carbon Company: *See—*
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Combustion Engineering, Inc.: *See—*
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Bourgeaux, Maurice, 3,687,649.
Computer Image Corporation: *See—*
Altemus, William C., 3,688,028.
Comte, Georges N., to Cables de Lyon Alsacienne. Machine for the continuous production of helical circular wave guides. 3,687,782, Cl. 156-425.000.
Condecor, Inc.: *See—*
Levy, Leon M., 3,686,783.
Condon, David C.: *See—*
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Consolidated Packaging Corporation: *See—*
Leslie, Prystup J.; and Mc Nair, William E., 3,687,353.
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Cook, Billy G., to General Electric Company. Fastening support means. 3,687,409, Cl. 248-151.000.
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Cook, Gerald H.: *See—*
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Cooke, George A.; and Griot, Rudolf G., to Sandoz-Wander, Inc. Substituted-A-anilino pyrrolines. 3,687,973, Cl. 260-326.300.
Cooksey, William Harold. Ignition distributors. 3,686,749, Cl. 29-598.000.
Coolidge, Anson S.: *See—*
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Coors Porcelain Company: *See—*
Maytag, John Hardy, 3,687,098.
Corey, Victor B., to United Control Corporation. Fluidic direction and velocity detection apparatus. 3,686,937, Cl. 73-189.000.
Cormier, Roger L.; Sorg, John H., Jr.; and Thorn, Caryl A., to International Business Machines Corporation. Command retry control by peripheral devices. 3,688,274, Cl. 340-172.500.
Corn, Prentice R.: *See—*
Wolf, Walter A.; and Corn, Prentice R., 3,688,065.
Cornelius, Gail, to Wade, R. M., & Co. Reversing water motor. 3,687,373, Cl. 239-191.000.
Corry Jamestown Corporation: *See—*
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Hasbrouck, Gene B.; and Green, Alan L., 3,687,089.
Corte, Herbert; and Heller, Harold, to Farbenfabriken Bayer Aktiengesellschaft. Crosslinked acrylonitrile copolymers. 3,687,912, Cl. 260-80.810.
Cosby, Henry L., to Clark Equipment Company. Lift truck with overhead guard and counterweight. 3,687,484, Cl. 280-150.00c.
Cotterman, James W.: *See—*
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Coyle, Edward L.: *See—*
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Coyne, Francis P., to Ingersoll-Rand Company. Spread center bushing. 3,687,226, Cl. 180-9.500.
Crane, Denis Percy; and Joyce, Edgar, to Ofrex Group Limited. Thermographic copying machines. 3,688,082, Cl. 219-216.000.
Crast, Leonard Bruce, Jr., to Bristol-Myers Company. 7-[D-(a-Amino-a phenylacetamido)]-3-(4-methyl-1, 3-oxazol-a-ylthiomethyl)-3-cephem-4-carboxylic acid and salts thereof. 3,687,948, Cl. 260-243.00c.
Crawford, Wheeler C.: *See—*
Godfrey, Arthur William; Dorn, Peter; and Crawford, Wheeler C., 3,687,852.
Credali, Lino; and Parrini, Paolo, to Consiglio Nazionale Delle Richerche and Montecatini Edison S.p.A. Osmosis process. 3,687,842, Cl. 210-23.000.
Crimp, Arthur Elliott; and Ellen, Peter Edington. Rail track support. 3,687,346, Cl. 238-25.000.
Cronan, Charles J.: *See—*
La Belle, Harold E., Jr.; and Cronan, Charles J., 3,687,633.
Crouch, Willie W.; and Moberly, Charles W., to Phillips Petroleum Company. Recovery of solvent in arylene sulfide polymer production. 3,687,907, Cl. 260-79.001.
CSF-Compagnie Generale de Telegraphie San Fils: *See—*
Salmon, Jacques, 3,688,311.
Csizmar, John R.; and Hebeler, Herbert A., to United States of America, Army. Gas operated firearm muzzle attachment. 3,687,000, Cl. 89-14.00e.
Cumbo, Peter E.; Hart, James L.; Kao, Peter T.; and Negus, George T., to Eastman Kodak Company. Film processing method. 3,687,751, Cl. 156-64.000.
Cummins Engine Company, Inc.: *See—*
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Cunningham, Cecil R.; and Rushton, James C., to Owens-Corning Fiberglas Corporation. Method for packaging glass strands. 3,687,381, Cl. 242-18.00r.
Cunningham, Ernest R.; and Stockdale, William D., to Illinois Tool Works Inc. Method of making container carrier structure. 3,687,020, Cl. 93-35.00j.
Cunningham, Ethel Peggy: *See—*
Winburn, Lloyd Earl; and Cunningham, Jack B., 3,687,729.
Cunningham, Jack B.: *See—*
Winburn, Lloyd Earl; and Cunningham, Jack B., 3,687,729.
Cupler, John A., II. Multiple drill head. 3,687,564, Cl. 408-47.000.
Cupler, John A., II. Mechanical/nonmechanical machining center. 3,688,075, Cl. 219-121.0eb.
Cupler, John A., II. Multiple drill head. 33,687,564, Cl. 325/024/1/8/.
Curlee Clothing Company: *See—*
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Curtis, Thomas C.: *See—*
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Cutrona, Louis J.: *See—*
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Cwynar, Thomas; and Trzeciak, John R., to Singer-General Precision, Inc. Sine-cosine function generator using a power series. 3,688,098, Cl. 235-197.000.
Cyriax, Wilhelm. Mold-closing means, particularly for die-casting and injection-molding machines for metals and synthetics. 3,687,590, Cl. 425-16.000.
Dague, Harold F. Laminated picture-type phonograph record, and method of making the same. 3,687,769, Cl. 156-219.000.
Dahl, Christian W., to Hartzell Corporation. Motorcycle riding simulator. 3,686,776, Cl. 35-11.000.
Dahlberg, Kurg G., to Thermo Trim, Inc. Egg carton. 3,687,355, Cl. 229-45.000.
Dahlgren, Donald A.: *See—*
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Daido Reare Kabushiki Kaisha: *See—*
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Forster, Hans-Joachim M.; and Katz, Klaus, 3,687,014.
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Dale, James, Corporation: *See—*
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Dalley, Lawrence A., to United States Steel Corporation. Apparatus for turning elongated articles. 3,687,301, Cl. 214-1.0qs.
Dambrine, Francis; Giorgi, Jean-Claude; and De Cremoux, Jacques, to Societe Fives Lille-Cail. Wall cleaning in a crystallization vessel. 3,687,636, Cl. 23-273.00r.
D'Ambrosio, Margaret R.: *See—*
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Damon Corporation: *See—*
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Scanlon, Michael J., 3,687,359.
Damon, Paul H.: *See—*
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Petersen, Jorgen Hartvig; and Madsen, Ingvard Mosby, 3,687,154.
Daniels, Dale L.; and Furnival, Thomas J., to General Motors Corporation. Cold welded semiconductor package having integral cold welding die. 3,688,163, Cl. 317-234.00r.
Daniels, Dennis, to U.S. Amada, Ltd. Turret indexing mechanism. 3,686,992, Cl. 83-551.000.
Danilkin, Nikolai Nikiforovich: *See—*
Sokolov, Anatoly Danilovich; Danilkin, Nikolai Nikiforovich; and Kanavets, Ivan Fedorovich, 3,686,933.
Danno, Atsushi: *See—*
Hikida, Ryotaro; Awano, Taikichi; Danno, Atsushi; and Kojima, Yoshiro, 3,686,917.
Dardas, Anastasios, to Berthier, J., Laboratories S.A. Derivatives of dipropylacetamido-2-pyrimidine. 3,687,953, Cl. 260-256.400.
Dardoufas, Kimon C., to Allied Chemical Corporation. Polyester multifilament yarns. 3,687,721, Cl. 117-138.80f.
Darmawan, Brotoharsojo: *See—*
Spauschus, Karl; and Darmawan, Brotoharsojo, 3,687,511.
Data Electronics Corporation: *See—*
Chao, Stanley K., 3,688,307.
Daudt, Charles H., Jr. Method and apparatus for detecting stall buffet. 3,686,936, Cl. 73-180.000.
Daumuller, Hans, to Bosch, Robert, G.m.b.H. Vehicle headlight. 3,688,103, Cl. 240-44.300.
D'Ausilio, Robert F.; and Updegraff, Robert E., to Threshold Engineering, Inc. Vehicle intrusion alarm system. 3,688,256, Cl. 340-63.000.
Davidson, Charlotte C.: *See—*
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Davis and Furber Machine Company: *See—*
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Davis, Lawrence D. Apparatus for aligning trailer axles. 3,686,770, Cl. 33-193.000.

Davis, Melvin H.: *See—*
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Davison, Ellard D., Jr.; and Haviland, Merrill L., to General Motors Corporation. Method and apparatus for control of transmission breathing. 3,686,973, Cl. 74-606.000.

Davy and United Engineering Company Limited: *See—*
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De Boer, Geert, to Stork Amsterdam N.V. Method and a device for preparing a quickly soluble powder. 3,687,681, Cl. 99-56.000.

De Clercq, Eric Desire Alice: *See—*
Merigan, Thomas C., Jr.; Eckstein, Fritz; and De Clercq, Eric Desire Alice, 3,687,808.

De Cremoux, Jacques: *See—*
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De Witt, David A.; and De Witt, Ralph W. Conveyor loading and counting system. 3,687,267, Cl. 198-40.000.

De Witt, Ralph W.: *See—*
De Witt, David A.; and De Witt, Ralph W., 3,687,267.

Dean, Frank J., Jr.; and Thompson, Neil J., to Tempmaster Corporation. Air vane and fire damper for integrated ceiling systems and the like. 3,687,055, Cl. 98-40.00d.

Debono, Manuel, to Lilly, Eli, and Company. Method for recovery of cephaloridine. 3,687,947, Cl. 260-243.00c.

Dee, Colin William. Fluid pad bearing. 3,687,506, Cl. 308-9.000.

Deering Milliken Research Corporation: *See—*
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Del Monte Corporation: *See—*
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Del Rosso, Victor, to Hi-Speed Checkweigher Co., Inc. Apparatus for weight classifyting odd shaped articles. 3,687,362, Cl. 235-98.00r.

Delafield, David J.; Edwards, Alan H.; and Owen, Keith, to Esso Research and Engineering Company. Gasoline compositions. 3,687,644, Cl. 44-56.000.

Delahunt, R. E., to Berry Systems Incorporated. Tapping device for beer kegs. 3,687,340, Cl. 222-400.700.

Delonge, Jean-Claude Lucien: *See—*
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Derby, Richard, to Rohm and Haas Company. Adhesive system. 3,687,801, Cl. 161-184.000.

Desbois, Gerard P., to Combustion Engineering, Inc. Pressure tube reactor fuel bundle. 3,687,805, Cl. 176-78.000.

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Despres, Daniel C.: *See—*
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Dessureault, Elot. Paste dispenser and disposable cartridge therefor. 3,687,339, Cl. 222-183.000.

Desvignes, Francois, to U.S. Philips Corporation. Semiconductor device for modulating electromagnetic radiation. 3,688,166, Cl. 317-235.00r.

Detroit Edison Company, The: *See—*
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Deutsche Gold- und Silber-Scheideanstalt vormals Roessler: *See—*
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Dever, James L.; and Carlson, Richard D., to Hooker Chemical Corporation. Process for preparing halogenated cyclopentadiene diadducts of furan. 3,687,983, Cl. 260-346.20m.

DeVries, Richard Alan, to Minnesota Mining and Manufacturing Company. Sequence camera. 3,687,533, Cl. 352-121.000.

Dexter, Martin; and Knell, Martin, to Ciba-Geigy Corporation. Alkylthioalkanoylaminophenol antioxidants for organic material. 3,687,892, Cl. 260-45.90r.

Diagnostic Data, Inc.: *See—*
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Diamond, Arthur S.; and Carr, David E., to Telantograph Corporation. Electrolytic recording medium. 3,687,822, Cl. 204-2.000.

Diamond Shamrock Corporation: *See—*
Kennedy, Alexander W.; and Malkin, Irving, 3,687,739.
Malkin, Irving, 3,687,738.

Dick, A. B., Company: *See—*
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Dickerson, Burl D. Temporary pipe support. 3,687,407, Cl. 248-59.000.

Dietrich, Henri, to Ciba-Geigy Corporation. N'-Substituted N-arylsulfonyl ureas. 3,687,934, Cl. 260-239.0bb.

Dietrich, Henri, to Ciba-Geigy Corporation. 1,2,4,5-Tetrahydro-3H-3-benzazepine-3-carbonyl chloride. 3,687,935, Cl. 260-239.0bb.

Digital Systems, Inc.: *See—*
Kosmowski, Wojciech B., 3,687,467.

Dimroth, Peter: *See—*
Bobenheim-Roxheim, Manfred Gaeng; and Dimroth, Peter, 3,687,991.

Dine, Lester A.; and Lemmey, Edgar S. Close-up camera attachment. 3,687,030, Cl. 95-11.000.

Dingwall, Andrew G. F., to RCA Corporation. Operation of field-effect transistor circuits having substantial distributed capacitance. 3,688,264, Cl. 340-173.0ff.

DiNoia, Emanuel J.; Klatte, Henry B.; and Breunich, Theodore R., to Universal Oil Products Company. Hydraulic cushioning device. 3,686,708, Cl. 16-51.000.

Dischler, Helmut, to Becorit Grubenausbau GmbH. Press assembly. 3,687,070, Cl. 100-271.000.

Disco Engineering, Inc.: *See—*
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Distler, Harry; Widder, Rudi; Stanger, Bernd; Muellr, Alfred; Druschke, Wolfgang; Mueller, Alfred; and Druschke, Wolfgang, to Badische Anilin- & Soda-Fabrik Aktiengesellschaft. Production of polymers having betaine groups containingsulfur atoms. 3,687,886,Cl. 260-29.6ta.

Dittmar, Walter: *See—*
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Dixon Automatic Tool, Inc.: *See—*
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Dixon, John L. Fishing device. 3,686,785, Cl. 43-15.000.

Dixon, Paul H.; and Schmidt, Paul R., to Dixon Automatic Tool, Inc. Facsimile transmitter and method of assembling the same. 3,688,032, Cl. 178-7.600.

Dobkin, Lloyd: *See—*
Butler, Louise; Dobkin, Lloyd; and Ellner, J. Robert, 3,687,090.

Dodel, Peter: *See—*
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Doelz, Melvin L. Quadrature transmission modern apparatus using single sideband data detection. 3,688,196, Cl. 325-60.000.

Doi, Tatsumi: *See—*
Suzuki, Ruuzo; Sato, Sumihisa; Okamoto, Shuji; Shinozaki, Akira; and Doi, Tatsumi, 3,687,542.

Domkraft AB Nike: *See—*
Bjork, Bengt Anders, 3,687,417.

Donaldson, John Taylor, to United Kingdom of Great Britain and Northern Ireland, Secretary of State for Defense in Her Britannic Majesty's Government of the. Reactor devices for wheeled vehicles. 3,687,315, Cl. 214-86.00a.

Donohue, Thomas W.; Murphy, John Brian; and Bissett, Thomas B., to Bissett-Berman Corporation, The. Temperature monitoring apparatus. 3,688,296, Cl. 340-229.00r.

Dorer, Casper J., to Lubrizol Corporation, The. Reaction product of carboxylic acid with degraded ethylene-propylene interpolymer. 3,687,905, Cl. 260-78.40d.

Doring, Erich. Riveting apparatus. 3,687,349, Cl. 227-61.000.

Dorn, Peter: *See—*
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Dostes, Clude G.: *See—*
Audran, Roger G. L.; Dostes, Clude G.; and Marechal, Claude M., 3,687,677.

Doty, Myrle M. Convertible saw blade. 3,686,799, Cl. 51-181.00r.

Douzon, Colette A.: *See—*
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Dow Chemical Company, The: *See—*
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Drake, Elisabeth M.; and Gifford, William E., to Little, Arthur D., Inc. Fractionation method and apparatus. 3,686,828, Cl. 55-90.000.
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Hanson, Alden W.; Evani, Syamalarao; and Drake, Lewis R., 3,687,906.
Dreher, Hans C., to General Cigar Co., Inc. Quick-return severing device for a moving continuous rod. 3,686,989, Cl. 83-320.000.
Dreissen, Hubert H.: *See—*
Leeman, Jan N. J.; and Dreissen, Hubert H., 3,687,284.
Dresser Industries, Inc.: *See—*
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Silverstein, Ronald M., 3,687,859.
Drum, James R.: *See—*
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Distler, Harry; Widder, Rudi; Stanger, Bernd; Muellr, Alfred; Druschke, Wolfgang; Mueller, Alfred; and Druschke, Wolfgang, 3,687,886.
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Dunn, Elmer M. Apparatus for treating fabric items. 3,687,102, Cl. 118-2.000.
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Dyroff, David R., to Monsanto Company. Crystalline from V ammonium polyphosphate and process for producing same. 3,687,695, Cl. 106-3.000.
Dyskin, Ernest Matveevich; Raevsky, Georgy Vladimirovich; Biletsky, Semen Mikhailovich; Burmenko, Eduard Jurievich; Grosman, Erikh Ruvimovich; Satanovsky, Abram Lazarevich; Kremnev, Oleg Alexandrovich; Zhuravlenko, Viktor Yakovlevich; and Protsyshin, BorisNikolaevich. Hollow tyre of rotary furnaces and method of equalizing tyre temperatures. 3,687,434, Cl. 266-24.000.
Eagle-Picher Industries, Inc.: *See—*
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Easley, Sydney Eugene, to General Motors Corporation. Damped shaft coupling. 3,686,895, Cl. 64-1.00v.
Eastman Kodak Company: *See—*
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Cohen, Hyman L., 3,687,698.
Cumbo, Peter E.; Hart, James L.; Kao, Peter T.; and Negus, George T., 3,687,751.
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Easton, Wayne B. High pressure expansible chamber device. 3,687,571, Cl. 418-270.000.
Easton, Wayne B. High pressure expansible chamber device. 3,687,581, Cl. 418-270.000.
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Edwards, Alan H.: *See—*
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Edwards, Thomas C., to Purdue Research Foundation. Air refrigeration device. 3,686,893, Cl. 62-402.000.
Eggemmuller, Alfred; Scherer, Lorenz; Notter, Eugen; Bellan, Heinrich; and Wagler, Werner, to Gebruder Eberhardt. Method and device for building up and removing flat mass of goods. 3,687,061, Cl. 100-65.000.
Egnaczak, Raymond K., to Xerox Corporation. Materials application apparatus. 3,687,109, Cl. 118-637.000.
Ehrlenspiel, Klaus; and Strinzel, Horst. Planetary gearing with herringbone teeth. 3,686,968, Cl. 74-410.000.
Eide, Melvin O., to United Control Corporation. AC bridge and detector circuit. 3,688,206, Cl. 329-204.000.
Eisele, Hermann: *See—*
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Eisenegger, Edwin B., to Gebruder Buhler AG. Elevator, especially for the vertical of granular or pulverulent materials. 3,687,272, Cl. 198-168.000.
Eitzen, August D.: *See—*
Magers, Leroy; Riddle, John H.; and Eitzen, August D., 3,687,380.
Ekstrand, Roy A., to Admiral Corporation. Tint control. 3,688,021, Cl. 178-5.4he.
Ekstrom, Per-Olof; and Hyden, Hans, to AB Centralsug. System for pneumatic transfer of goods. 3,687,503, Cl. 302-39.000.
Electrogasdynamics, Inc.: *See—*
Geberth, John D., Jr., 3,687,368.
Electronic Systems, Inc.: *See—*
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Elektra Systems, Inc.: *See—*
Governale, Anthony J., 3,688,105.
Elkin, Robert A. Tubular laminate. 3,687,795, Cl. 161-47.000.
Ellen, Peter Edington: *See—*
Crimp, Arthur Elliott; and Ellen, Peter Edington, 3,687,346.
Ellis, Stephen R. M.: *See—*
Porter, Kenneth E.; Ellis, Stephen R. M.; Ashton, Neil; and Hands, Clifford H. G., 3,687,818.
Ellison, John M., to Vacuum/Atmospheres Corporation. Pneumatic control valve for vacuum chambers. 3,687,570, Cl. 417-199.000.
Ellner, J. Robert: *See—*
Butler, Louise; Dobkin, Lloyd; and Ellner, J. Robert, 3,687,090.
Ellwanger, Charles G., to Gleason Works, The. Automatic server for machine for running pairs of gears together. 3,686,801, Cl. 51-215.00r.
Emerson Electric Co.: *See—*
Gruswitz, Frank A., 3,687,600.
Emmett, James Ratcliffe, to Weir Water Treatment Limited. Water treatment processes. 3,687,843, Cl. 210-35.000.
Enderbrock, Edward N.; and Bodine, Charles M., to IPT Corporation. Photo-printing apparatus. 3,687,546, Cl. 355-73.000.
Engeler, William E.; and Brown, Dale M., to General Electric Company. Method and apparatus for providing thermal contact and electrical isolation of integrater circuits. 3,686,748, Cl. 29-577.000.
Engelhard Minerals & Chemicals Corporation: *See—*

Keith, Carl D.; Haley, Alfred J., Jr.; and Kero, Robert M., 3,687,724.
English Clays Lovering Pochin & Company Limited: *See*—
Gwilliam, Ralph Derek, 3,687,287.
Epper, Karl F., to Ocean Sales, Inc. Storage system. 3,687,111, Cl. 119-2.000.
Erbil, Ibrahim Hidayet, to Aronsen, Daniel, Jr., mesne. Building suspension apparatus. 3,686,816, Cl. 52-83.000.
Erdolchemie Gesellschaft mit beschrankter Haftungs: *See*—
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Erickson, Kenneth W.: *See*—
Palmer, Neil R.; Karge, Joseph R.; and Erickson, Kenneth W., 3,688,228.
Erickson, Rodney R.; Matthews, Ralph W.; and Sprangel, Richard V., to Caterpillar Tractor Company. Thermal compensator valve for differential pressure devices. 3,687,160, Cl. 137-599.100.
Erickson, Wallace A.; and Safstrom, Donald K. Inflated picture holder. 3,686,782, Cl. 40-152.000.
Erlichman, Irving, to Polaroid Corporation. Photographic apparatus. 3,687,032, Cl. 95-13.000.
Ernst, Robert R., to Sybron Corporation. Method of controlling relative humidity in gaseous sterilizers. 3,687,612, Cl. 21-58.000.
Erpelding, William J., Jr., to Monsanto Company. Display annuciator using SCR memory and digital logic circuitry. 3,688,294, Cl. 340-213.100.
Esashi, Yoshiaki: *See*—
Suzuki, Akira; Esashi, Yoshiaki; and Nakanishi, Tsunemoto, 3,687,397.
Essiet, Okon A. Process for extracting a sweetening agent from dioscoreophyllum cumminsii berries. 3,687,693, Cl. 99-141.000.
Esso Production Research Company: *See*—
Lock, Everett H.; and Maurer, William C., 3,687,493.
Esso Research and Engineering Company: *See*—
Bieber, Herman; Spenade, Lawrence; and Coddington, David M., 3,687,746.
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Tyler, William E., III; and Lovett, John R., 3,687,954.
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Estis, Lonnie J., to Sepco. Apparatus for curing building blocks. 3,687,598, Cl. 425-445.000.
Etablissement Radiator: *See*—
Von Platen, Baltzar Carl; Jonsson, Finn Lennart; and Trolle, Sten, 3,687,066.
Etablissements Brissonneau et Lotz: *See*—
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Etat Francais, represente par le Ministere des Armees, Delegation Ministreielle pour l'Armement-Direction Technique des Constructions Aeronautiques et Compagnie Francais: *See*—
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Ludt, William C.; and Watson, Edward P., 3,686,924.
Rogosch, John E.; and Williams, Floyd B., 3,687,764.
Eudier, Michel. Brake or clutch lining. 3,687,643, Cl. 29-192.200.
Europote S.A.: *See*—
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Evani, Syamalarao: *See*—
Hanson, Alden W.; Evani, Syamalarao; and Drake, Lewis R., 3,687,906.
Evans, Thomas S.: *See*—
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EWI Research & Development Corporation: *See*—
Spinosa, Dom; and Varga, John, 3,687,296.
Exner, Jurgen H.; Larsen, Eric R.; and Gunsher, Jeffrey A., to Dow Chemical Company, The. Carbonate containing halogenated neapentyl groups. 3,688,001, Cl. 260-463.000.
Explosives Corporation of America: *See*—
Friant, James E.; Pawlak, Daniel E.; and Goode, John W., 3,687,076.
Factor, Arnold, to General Electric Company. Deionization of liquid media. 3,687,829, Cl. 204-149.000.
Fader, John H.; Keijzer, Johan H.; and Graulus, Marcel J. R., to Monroe Belgium N.V. Vehicle leveling system. 3,687,480, Cl. 280-124.00f.
Fairfield Manufacturing Company, Inc., mesne: *See*—
Knoblach, John C.; and Shepard, Ray M., 3,686,978.
Faisandier, Jacques. Ammunition drum and turret for automatic weapons. 3,687,004, Cl. 89-33.00d.
Falcy, Bernard C.; and Mazuir, Rene, to Societe Anonyme des Hauts Fourneaux de la Chiers. Cables having non-metallic cores. 3,686,855, Cl. 57-145.000.
Falk, Roland: *See*—
Hartmann, Job-Werner; Hartmann, Hans Joerg; Schnell, Georg; Falk, Roland; and Balz, Werner, 3,687,725.
Fall, Herbert S.: *See*—
Fall, Maxwell S.; and Lambert, Ronald D., 3,687,505.
Fall, Maxwell S.; and Lambert, Ronald D., to Fall, Herbert S. Slide with synchronizing cable drive. 3,687,505, Cl. 308-3.800.
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Farbenfabriken Bayer Aktiengesellschaft: *See*—
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Hoffman, Hellmut; Hammann, Ingeborg; and Behrenz, Wolfgang, 3,687,963.
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Kurtz, Peter; and Schwarz, Herbert, 3,688,003.
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Nast, Roland; Dahm, Manfred; and Ley, Kurt, 3,687,876.
Oberkirch, Wolfgang; Gunther, Peter; and Pampus, Gottfried, 3,687,921.
Simmler, Walter; and Steinbach, Hans-Horst, 3,687,606.
Vernaleken, Hugo; Malamet, Georg; Bottenbruch, Ludwig; Krimm, Heinrich; and Schnell, Hermann, 3,687,895.
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Farbwerke Hoechst Aktiengesellschaft: *See*—
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Farbwerke Hoechst Aktiengesellschaft vormals Meister Lucius & Bruning: *See*—
Breitwieser, Heinz; and Heinz, Otto, 3,686,813.
Farmer, Larry B., to Deering Milliken Research Corporation. Stabilization of wool through treatment with a reducing agent and a polymer of polymer forming materials. 3,687,605, Cl. 8-127.600.
Farnsworth, Dennis G.: *See*—
Moehlenpah, Walter G.; and Farnsworth, Dennis G., 3,687,239.
Farrand, Weston B.; Gardner, John N.; and Valenti, Robert M., to Space Ordance Systems Inc., mesne. Microdetonator assembly. 3,686,934, Cl. 86-1.000.
Faulstich, Marga; and Neuroth, Norbert, to JENAer Glaswerk Schott & Gen. Glasses for temperature-stable ultrasonic delay lines of low damping characteristics. 3,687,697, Cl. 106-53.000.
Fauran, Claude P.; Gouret, Claude J.; Raynaud, Guy M.; and Douzon, Colette A., to S.A. Delalande. Novel 5-(N-substituted aminomethyl)-2-oxazolidionones and their process of preparation. 3,687,965, Cl. 260-307.00c.
Favre, John A., to Phillips Petroleum Company. Total sample indicator for chromatography. 3,686,923, Cl. 73-23.100.
Fedorenko, Anatoly Stepanovich; Mescheryakov, Jury Alexeevich; Prytkov, Alexandr Alexandrovich; and Tyabirdin, Vladimir Vasilievich. Amalgam housing means for a fluorescent lamp. 3,688,148, Cl. 313-109.000.
Feiler, William A.; and Shen, Chung Yu, to Monsanto Company. Solid nitrilotriacetate-metal complexes. 3,687,992, Cl. 260-429.00r.
Felice, Tetaz: *See*—
Ackermann, Jacob; Ferre, Franceo; and Felice, Tetaz, 3,687,899.
Felker, Paul J., to Penetred Corporation. Art of forming tire treads with elongated traction-augmenting elements. 3,687,583, Cl. 425-20.000.
Fender, Clarence L., to Columbia Broadcasting System, Inc. Shoulder strap-operated pitch-changing means for spanish guitars. 3,686,993, Cl. 84-312.000.
Fenghler, Gerd: *See*—
Ledergerber, Alfred; Jacoby, Hans; and Fenghler, Gerd, 3,686,986.
Fernandes, Joseph F.; and Coolidge, Anson S., to United Aircraft Products, Inc. Phase separator. 3,687,176, Cl. 141-59.000.
Ferrand, Andre; and Bonnefont, Michel, to Regie Nationale des Usines Renault. Constant-current heating devices for fixed window seals. 3,688,078, Cl. 219-482.000.
Ferre, Franceo: *See*—
Ackermann, Jacob; Ferre, Franceo; and Felice, Tetaz, 3,687,899.
Field, George Francis; Sternbach, Leo H.; and Zally, William Joseph, to Hoffmann-La Roche Inc. Dehydrobiotin synthesis. 3,687,967, Cl. 260-309.700.
Filhol, Jean, to Etablissements Brissonneau et Lotz. Open electric machine for operating in an aggressive medium. 3,688,137, Cl. 310-43.000.
Findlay, John S., to Microdyne, Inc. Incremental data processing sprocketed tape deck. 3,688,058, Cl. 179-100.200.
Finley, Gilbert Ralph, to Lucas, Joseph, (Industries) Limited. Vehicle windscreen wiping mechanisms. 3,686,706, Cl. 15-250.160.
Fiocco, Robert J.; and Wilson, Edward L., to Esso Research and Engineering Company. Coal liquefaction solids removal. 3,687,837, Cl. 208-8.000.
Fischer & Porter Company: *See*—
Riester, Hubert; and Futamura, Jun, 3,688,176.
Fischer, Adolf: *See*—
Kiehs, Karl; Koenig, Karl-Heinz; and Fischer, Adolf, 3,687,997.
Fischer, Knut, to Heye, Hermann. Apparatus for inspecting glass containers or the like. 3,687,559, Cl. 356-240.000.
Fischer, Wilhelm Anton, to Dynamit Nobel Aktiengesellschaft. Metallurgical furnaces or vessels. 3,687,437, Cl. 266-43.000.
Fisons Limited: *See*—
Wragg, Arthur Hedley, 3,687,979.

Fitzgerald, John M.; and James, Varnell L., to Boeing Company, The. Method and apparatus for providing a retractable multi-truck inline landing gear for heavy aircraft. 3,687,400, Cl. 244-102.00r.

Fitzgerald, William Vincent, Jr.; and Wilmarth, Paul Carlton, to RCA Corporation. Horizontal oscillator disabling. 3,688,031, Cl. 178-7.50r.

Flachsbarth, Dieter, to Siemens Aktiengesellschaft. Circuit arrangement for determining the position of a movable object. 3,688,133, Cl. 307-309.000.

Flagge, Andrew, to Thor Power Tool Company. Torque applying and tension controlling device. 3,686,983, Cl. 81-52.400.

Flannery, John B., Jr.: *See—*
Haas, Werner E. L.; Adams, James E.; and Flannery, John B., Jr., 3,687,515.

Fleisch, Alfred: *See—*
Fleisch, Alfred; and Perren, Stephan (said Perren assor. to said), 3,686,925.

Fleisch, Alfred; and Perren, Stephan, said Perren assor. to said Fleisch, Alfred. Fluid agglomeration testing methods and equipment. 3,686,925, Cl. 73-61.00r.

Fleissner, Gerold: *See—*
Fleissner, Heinz; and Fleissner, Gerold, 3,686,902.

Fleissner, Hans, to Vepa AG. Apparatus for the contact-free treatment of materials which can be stressed in a lengthwise direction. 3,686,903, Cl. 68-5.00d.

Fleissner, Heinz; and Fleissner, Gerold, to Vepa AG. Apparatus for the heat-treatment of textile material. 3,686,902, Cl. 68-5.00d.

Fletcher, Franklin I.: *See—*
Sakamoto, Wayne Y.; Westphal, Stephen Roger; and Fletcher, Franklin I., 3,686,794.

Floren, Carl E.: *See—*
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FMC Corporation: *See—*
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Fogautolube S.A.: *See—*
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Foitl, Verena R.; and Traber, Walter, to Ciba-Geigy Corporation. Process for the production of 1-formyl-3 nitro-azacyclo-alkan-2-ones. 3,687,939, Cl. 260-239.30r.

Foitl, Verena R.; and Traber, Walter, to Ciba-Geigy Corporation. Process for the production of 3-amino-azacycloheptan-2-one. 3,687,940, Cl. 260-239.30r.

Folden, Denver C.: *See—*
Appleby, Paul E.; Folden, Denver C.; and Stuhldreher, Paul R., 3,687,756.

Folden, Denver C.; and Peck, Arland A., to Goodyear Tire & Rubber Company, The. Tire building apparatus with inflatable turn-up bladder. 3,687,779, Cl. 156-401.000.

Fomin, Georgy Georgievich: *See—*
Sokolov, Evgeny Vyacheslavovich; Yashkin, Eduard Petrovich; Sysoev, Vadim Ivanovich; Kozhevnikov, Rady Savvich; Chabanov, Alim Ivanovich; Shinkarenko, Mikhail Ivanovich; Grinchuk, Petr Stepanovich; Fomin, Georgy Georgievich; and Rusaev, Vladimir Ivanovich,3,686,907.

Fontana, Frank J., to Stewart-Warner Corporation. Caster brake. 3,687,241, Cl. 188-74.000.

Ford Motor Company: *See—*
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Forestal, Richard F. Collapsible barricade assembly. 3,687,419, Cl. 256-64.000.

Forste, Walter; Teuschler, Hans-Joachim; and Schreiber, Joachim, to VVB Elektrische Konsumguter. Collector ring bodies for electric motors. 3,688,142, Cl. 310-232.000.

Forster, Franz, to Linde Aktiengesellschaft. Automotive vehicle with hydrostatic drive. 3,687,212, Cl. 180-66.00r.

Forster, Hans-Joachim M.; and Katz, Klaus, to Daimler-Benz Aktiengesellschaft. Servo-steering system for motor vehicles. 3,687,014, Cl. 92-33.000.

Fort, Larry W.; and Marshall, Connie T. Apparatus to protect a phase-locked-loop against loss of synchronizing signal. 3,688,210, Cl. 331-1.00a.

Foster, Karl; and Seidel, Joseph, to Westinghouse Electric Corporation. Process of making glass coated electrical steel sheets. 3,687,742, Cl. 148-113.000.

Foster Wheeler Corporation: *See—*
Bell, Alan, 3,687,115.
Hill, William G.; and Bromwich, Robert A. C., 3,688,076.
Holt, Kenneth, 3,687,116.

Fournier, Gilbert C. F.: *See—*
Alleaume, Jean H.; and Fournier, Gilbert C. F., 3,686,920.

Fraga, Cornelio. Ball and cup toy. 3,687,453, Cl. 273-97.00r.

Francois, Marcel, to Etat Francais, represente par le Ministere des Armees, Delegation Ministreielle pour l'Armement-Direction Technique des Constructions Aeronautiques et Compagnie Francais. Munition. 3,686,999, Cl. 89-1.00r.

Franek, Jozef Tadeusz; and Rhodes, Peter, to Metal Box Company Limited. Scoring metal container components. 3,687,099, Cl. 113-15.00a.

Frank, William J. Apparatus for crushing and disposing of cans and glass containers. 3,687,062, Cl. 100-91.000.

Frankland, Roger A., to Tektronix, Inc. Method of manufacturing cathode ray storage tube target. 3,687,665, Cl. 96-36.000.

Franklin Electric Co.,Inc.: *See—*
Schaefer, Edward J., 3,688,140.

Frantz, Lee M.: *See—*
Witte, Robert S.; Frantz, Lee M.; and Peters, Eugene R., 3,688,217.

Frazier, Stanley J. Concrete form locked by universal key. 3,687,411, Cl. 249-44.000.

Fredrickson, Walter G.; Jones, George M.; and Thrailkill, Howard A., to Harris-Intertype Corporation. Full word wrap-around in editing/correcting display apparatus. 3,688,275, Cl. 340-172.500.

Freeman, Alfred B. Tone modulation system. 3,688,010, Cl. 84-1.110.

Freudenberg, Carl: *See—*
Prinz, Josef, 3,687,709.

Freund, Isaac; and Levine, Barry F., to Bell Telephone Laboratories, Incorporated. Spatially periodic nonlinear structures for frequency conversion of electromagnetic energy. 3,688,124, Cl. 307-88.300.

Frey, Egon, to Daimler-Benz Aktiengesellschaft. Installation for the indication of a full braking and of the stoppage in a motor vehicle. 3,688,258, Cl. 340-67.000.

Frey, Robert R.: *See—*
Adelstein, Jerome; and Frey, Robert R., 3,687,691.

Friant, James E.; Pawlak, Daniel E.; and Goode, John W., to Explosives Corporation of America. Field sensitized explosive package. 3,687,076, Cl. 102-24.000.

Fried, Joseph William. Metal cutting tool. 3,686,728, Cl. 29-96.000.

Fried Krupp Gesellschaft mit beschrankter Haftung: *See—*
Macrander, Karl; and Kessel, Heinrich, 3,687,307.
Macrander, Karl, 3,687,309.

Friedman, Ronald L.: *See—*
Lewis, Roger N.; and Friedman, Ronald L., 3,687,867.

Friedrich, Streck, to Rigips-Stempel GmbH & Co. KG. Sound-retarding wall elements. 3,687,223, Cl. 181-33.00g.

Friedrich Uhde GmbH: *See—*
Scheweinfurth, Hans; and Lambach, Rolf, 3,687,420.

Fritz, Fred A., to Hercules Incorporated. Modified presplitting technique. 3,687,075, Cl. 102-23.000.

Fritz, Rene; and Fritz, Rene Eugene, to Albany Machine & Supply, Inc., mesne. Apparatus for edging and resawing lumber. 3,687,269, Cl. 198-127.000.

Fritz, Rene Eugene: *See—*
Fritz, Rene; and Fritz, Rene Eugene, 3,687,269.

Froese, Richard Joseph: *See—*
Petri, William Edward, Jr.; and Froese, Richard Joseph, 3,686,979.

Fruhauf, Waldemar, to Krone GmbH. Two-stage PCM coder with compression characteristic. 3,688,221, Cl. 332-11.00r.

Frump, John A.; and Kruse, Harry F., to Commercial Solvents Corporation. Terpolymer latex emulsions. 3,687,888, Cl. 260-29.70n.

Fuchs, Francis Joseph, Jr., to Western Electric Company, Incorporated. Methods of and apparatus for hydrostatic forming. 3,686,910, Cl. 72-60.000.

Fuchs, Robert J.; Thomsen, James P.; and Jakobs, Bernhard W., to Shure Brothers Incorporated. Stylus tracking force gauge. 3,686,939, Cl. 73-141.00r.

Fuji Photo Film Co., Ltd.: *See—*
Hayakawa, Yoshihide; and Satomura, Masato, 3,687,667.
Iijima, Yoo; Shimamura, Isao; Kondo, Tokiharu; and Iwano, Kanagawa, 3,687,669.
Katayama, Shizuo; Matsukawa, Hiroharu; Yamato, Masaya; and Matsuyama, Junichi, 3,687,865.
Sato, Akiro; Sonoda, Minoru; Shiba, Keisuke; Hinata, Mansanao; and Nozoe, Tetsuo, 3,687,674.
Yoshida, Makoto; and Imai, Shinichi, 3,687,673.

Fuji Shashin Film Kabushiki Kaisha: *See—*
Ohashi, Azusa; and Ishiwata, Mamoru, 3,687,703.

Fujii, Shoichiro: *See—*
Nakamachi, Hideo; Kamiya, Kazuhide; Nishikawa, Masao; and Fujii, Shoichiro, 3,687,932.

Fujimori, Yoshiaki. Watertight watch cases for wrist watches. 3,686,882, Cl. 58-90.00r.

Fujimoto, Sakae, to Kabushiki-Kaisha Ricoh. Apparatus for cutting a sheet material. 3,686,991, Cl. 83-482.000.

Fujisawa, Masami Koguchi; and Takahashi, Isao. Automatic separating mechanism of a copying machine. 3,687,550, Cl. 355-106.000.

Fujisoku Electric Company Ltd.: *See—*
Yamanoto, Makoto; and Shintomi, Yukito, 3,688,062.

Fukuda, Kazuo: *See—*
Yamada, Keisho; Umemura, Sumio; Ohdan, Kyoji; Hidaka, Mikio; Fukuda, Kazuo; and Sawazi, Masao, 3,688,002.

Fukui, Kiyoshi: *See—*
Masaki, Mitsuo; Fukui, Kiyoshi; Ueda, Masahiro; and Okimoto, Kiyomi, 3,687,938.

Fukui, Toshio, to Japanese Geon Company, Ltd., The. Process for the preparation of improved cis-1,4-polyisoprene. 3,687,925, Cl. 260-94.300.

Fulton, Samuel R.; and Beal, Lawrence E., to Eagle-Picher Industries, Inc. Pivotal tire building machine frame having a drum and bead setting units. 3,687,780, Cl. 156-403.000.

Furnival, Thomas J.: *See—*
Daniels, Dale L.; and Furnival, Thomas J., 3,688,163.

Furoichi, Masayashi, to Katsuragawa Denki Kabushiki Kaisha. Electrophotographic apparatus. 3,687,539, Cl. 355-8.000.

Furois, Philippe C., to International Business Machines Corporation. Waveform transient measuring circuit and method. 3,688,194, Cl. 324-188.000.

Furukawa, Hikaru: *See—*
Suzuki, Takashi; and Furukawa, Hikaru, 3,688,301.

Furuta, Koichi, to Nippon Kogaku K.K. Multi-exposure device for photographic cameras. 3,687,039, Cl. 95-31.0ac.

Futamura, Jun: *See—*
Riester, Hubert; and Futamura, Jun, 3,688,176.

Fydelor, Peter John; and Lovell, Keith Victor, to Surface Activation Corporation. Production of improved polymeric materials using electrical gas discharges. 3,687,832, Cl. 204-165.000.

Gadomski, Walter A.; and Marziano, Bennedetto A., to United States of America, Army. Ammunition round. 3,687,078, Cl. 102-42.00c.

GAF Corporation: *See—*
Yao, Shi-Kuang, 3,687,946.

Gagel, Charles T., to Industrial Services of America, Inc. Lid lock for front end loader container. 3,687,317, Cl. 214-304.000.

Gagin, ! awrence Vincent, to Johns-Manville Corporation. High temperature insulating fiber. 3,687,850, Cl. 252-62.000.

Gainesville Machine Company, Inc.: *See—*
Lewis, Ernest E., 3,686,712.
Lewis, Ernest E., 3,686,713.

Gallagher, George Arthur; and Walter, Henry Clement, to Du Pont de Nemours, E. I., and Company. Adhesive bonding of -olefin hydrocarbon copolymers. 3,687,777, Cl. 156-308.000.

Gamble, Fred R., to Synvar Associates. X-ray diffraction grating crystals. 3,688,109, Cl. 250-51.500.

Gannon, Harry: *See—*
Krahe, Paul J.; and Gannon, Harry, 3,687,406.

Garand, Donald J.: *See—*
Borelli, Ronald F.; Despres, Daniel C.; and Garand, Donald J., 3,687,107.

Gardner, John N.: *See—*
Farrand, Weston B.; Gardner, John N.; and Valenti, Robert M., 3,686,934.

Garmaise, David Lyon: *See—*
Bernstein, Edith; Garmaise, David Lyon; and Plotnikoff, Nicholas Peter, 3,687,960.
Bernstein, Edith; Garmaise, David Lyon; and Plotnikoff, Nicholas Peter, 3,687,961.

Garrett Corporation, The: *See—*
Greenwald, Harold A., 3,687,233.

Garris, George James, to Du Pont de Nemours, E. I., and Company. High pressure purification of hydrogen fluoride. 3,687,622, Cl. 423-488.

Gaugh, Wilbur S., to Eastman Kodak Company. Photographic silver halide emulsions containing a cyanine dye containing at least one 1-cyanoalkyl-2-erylindole nucleus. 3,687,675, Cl. 96-101.000.

Gauss Electrophysics, Inc.: *See—*
Broadbent, Kent D., 3,687,664.

Gay, Michael J., to Motorola, Inc. Stable differential relaxation oscillator. 3,688,220, Cl. 331-111.000.

Gayla Industries, Inc.: *See—*
Christoffel, Julius M.; and Phillips, Lester F., 3,687,402.

Gayle, Robert. Pill dispenser with removable cartridge. 3,687,336, Cl. 221-7.000.

Geberth, John D., Jr., to Electrogasdynamics, Inc. Valve unit for air type electrostatic spray gun. 3,687,368, Cl. 239-15.000.

Gebr. Giulini, GmbH: *See—*
Rheude, Franz Gustav; Munster, Franz; and Brehmer, Harald, 3,687,714.

Gebruder Buhler AG: *See—*
Eisenegger, Edwin B., 3,687,272.

Gebruder Eberhardt: *See—*
Eggemmuller, Alfred; Scherer, Lorenz; Notter, Eugen; Bellan, Heinrich; and Wagler, Werner, 3,687,061.

Geiger, Friedhelm; Lussling, Theodor; Theissen, Ferdinand; and Weigert, Wolfgang, to Deutsche Gold- und Silber-Scheideanstalt vormals Roessler. Process for the production of cyanogen. 3,687,621, Cl. 423-384.0on.

Geisler, Roland; Jansen, Georg; and Germscheid, Hans Gunther, to Henkel & Cie G.m.b.H. Process for cleaning aluminum. 3,687,858, Cl. 252-156.000.

Geltzer, Bernard. Molding means and display casing for replicas of frontal teeth before and after orthodontic treatment. 3,686,760, Cl. 32-17.000.

Genchi, Hiroshi: *See—*
Watanabe, Sadakazu; Mori, Kenichi; Yoneyama, Tsuneo; and Genchi, Hiroshi, 3,688,266.

Gendreau, Jacques C., to Fogautolube S.A. Load lifting mechanism. 3,687,234, Cl. 187-25.000.

General Cigar Co., Inc.: *See—*
Dreher, Hans C., 3,686,989.

General Electric Company: *See—*
Cook, Billy G., 3,687,409.
Engeler, William E.; and Brown, Dale M., 3,686,748.
Factor, Arnold, 3,687,829.
Klompas, Nicholas, 3,687,569.
Laessig, Rudolf Reinhold, 3,687,365.
Markovitz, Mark, 3,687,872
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General Inetics Inc.: *See—*
Whysong, Dale C.; and Leininger, Dale E., 3,688,300.

General Motors Corporation: *See—*
Barnum, Thomas G., 3,688,297.
Bassett, Arthur T., Jr., 3,686,892.
Campbell, David D., 3,687,485.
Campbell, Robert W., 3,686,961.
Daniels, Dale L.; and Furnival, Thomas J., 3,688,163.
Davison, Ellard D., Jr.; and Haviland, Merrill L., 3,686,973.
Easley, Sydney Eugene, 3,686,895.
Green, Raymond J., 3,687,242.
Johnson, Lauren L., 3,688,182.
Parker, Eric G.; and Wolf, Charles C., 3,686,705.
Salihi, Jalal I.; Brockman, John J.; and Spix, George J., 3,688,171.
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General Signal Corporation: *See—*
Halmi, Dezsoe, 3,686,946.

General Telephone & Electronics Laboratories, Inc.: *See—*
Wacher, Paul, 3,687,863.

General Telephone & Electronics Laboratories, Incorporated: *See—*
Buhrer, Carl F., 3,688,282.
Kocher, Robert; Moore, Franklin; and Samelson, Harold, 3,688,216.

General Time Corporation: *See—*
Patrick, Alan E.; and Kern, Kenneth E., 3,686,878.

Geometron Company, Inc.: *See—*
Margolien, David H., 3,686,990.

George, John Barrett, to RCA Corporation. VHF and UHF automatic gain control circuitry derived from a single control voltage. 3,688,198, Cl. 325-404.000.

Georgii, Hans Christer. Plant for the manufacture of floating concrete structures in a body of open water. 3,686,886, Cl. 61-46.500.

Gerber, Christian N. Saw filing apparatus. 3,686,981, Cl. 76-36.000.

Germain, Leo M. Apparatus for adhesive lamination of flexible webs. 3,687,791, Cl. 156-549.000.

Germscheid, Hans Gunther: *See—*
Geisler, Roland; Jansen, Georg; and Germscheid, Hans Gunther, 3,687,858.

Gerring, Paul K., to Fanta Sea Swim Center, Inc. Swimming pool construction. 3,686,694, Cl. 4-172.190.

Geurts, Melle F.: *See—*
McArthur, Ralph F.; and Geurts, Melle F., 3,687,573.

Gevaert-Agfa N.V.: *See—*
Rillaers, Guy Alfred; Depoorter, Henri; and Moelants, Felix Jan, 3,687,670.
Verhille, Karel; Conix, Andre Jan; and Noe, Robert Joseph, 3,687,658.
Willems, Ozef Frans; Thiers, Robrecht Julius; and Priet, Roger Alois, 3,687,662.

Ghysels, David G., to Grove Manufacturing Company. Calculator for determining required extensible crane boom for use on a particular job site. 3,686,765, Cl. 33-97.000.

Gibson, Harold F.: *See—*
Gorrell, Richard L.; and Gibson, Harold F., 3,687,536.

Gifford, William E.: *See—*
Drake, Elisabeth M.; and Gifford, William E., 3,686,828.

Gijutsu Kenkyu Kumiai Amaike Kenyusho: *See—*
Okada, Sadayuki; and Nomura, Seinosuke, 3,686,845.

Gilbert, Dixie E., to Philips Petroleum Company. Alternate projections in sealing member. 3,687,593, Cl. 425-387.000.

Gill, Brian; and Moulding, Kenneth William. High frequency integrated circuit having circuit elements in separate and mutually spaced isolation regions. 3,688,132, Cl. 307-303.000.

Gilman, Paul Brewster, Jr.: *See—*
Spence, John; Gilman, Paul Brewster, Jr.; and Ulbing, Cynthia Geer, 3,687,676.

Gilson, Ian T.; Trosoinski, Edwin S.; Curtis, Thomas C.; and Watson, Robert G., to Nalco Chemical Company. Process for inhibiting corrosion of metallic surfaces with cooling water containing phenol-aldehyde resins. 3,687,610, Cl. 21-2.700.

Giombini, Giuseppe: *See—*
Natali, Remigio; and Giombini, Giuseppe, 3,687,853.

Giorgi, Jean-Claude: *See—*
Dambrine, Francis; Giorgi, Jean-Claude; and De Cremoux, Jacques, 3,687,636.

Giovanni, Sesto S.: *See—*
Vargiu, Silvio; Giovanni, Sesto S.; Nistri, Ugo; and Pezzoli, Silvestro, 3,687,896.

Gisser, Henry; and Mertwoy, Helen E., to United States of America, Army. α-N-Alkylacrylic esters and their polymers. 3,687,922, Cl. 260-89.50a.

Gits Bros., Mfg., Co.: *See—*
Jackson, Richard H.; and Schulz, George H., 3,687,464.

Giuseponi, Ernest D.: *See—*
Golick, Alexander J.; Giuseponi, Ernest D.; and Randolph, Arthur J., 3,687,178.

Givens, Wyatt W., to Mobil Oil Corporation. Method of and system for indirectly monitoring the output of a pulsed neutron source. 3,688,117, Cl. 250-83.100.

Glanvall, Rune Valdemar, to Stal Refrigeration AB. Means for regulating the capacity of rotary machines. 3,687,572, Cl. 417-310.000.

Glanz, Richard G. Portable refuse packer. 3,687,064, Cl. 100-100.000.

Glass Laboratories Company: *See—*
Shanok, Victor; and Shanok, Jesse P., 3,687,794.

Glass, Marvin, & Associates: *See—*
Breslow, Jeffrey D., 3,687,451.

Glaze, John W., Jr.; and Propst, James P., to Autoboard Corporation. Method of shrinking and 10r dyeing knit garment. 3,686,726, Cl. 28-74.00h.

Gleason, Thomas J., to United States of America, Army. Stimulated radiation cavity reflector. 3,688,218, Cl. 331-94.500.

Gleason Works, The: *See—*
Ellwanger, Charles G., 3,686,801.

Glennon, Richard F.: *See—*
LeMay, William E.; and Glennon, Richard F., 3,687,702.

Globe-Union Inc.: *See—*
Orlando, Daniel; and Smith, George Paul, 3,687,734.

Glowne Biuro Studiow i Projektow Zaplecza Technicznego Motoryzacji Warsvawa: *See—*
Rozwadowski, Witold; and Szymanski, Aleksander, 3,686,856.

Go International Inc.: *See—*
Smith, William D., 3,686,943.

Gobel, Klaus. Facing of the roof edges in saw-tooth roofs or similar roofs. 3,686,803, Cl. 52-18.000.

Godfrey, Arthur William; Dorn, Peter; and Crawford, Wheeler C., to Texaco, Inc. Automatic transmission fluid and method. 3,687,852, Cl. 252-77.000.

Goetchius, Norman E.; and Zaky, Amin Y., to Stromberg-Carlson Corporation. Telephone set idenification system using reverse polarity interrogation signal. 3,688,050, Cl. 179-17.00a.

Goetchius, Ronald J.: *See—*
Brown, William F.; and Goetchius, Ronald J., 3,688,088.

Goff, Richard E., to Christopherson, Rollin F. Truck tire holding and inflation apparatus. 3,687,442, Cl. 269-17.000.

Gogarty, William B.; and Bush, William P., to Marathon Oil Company. Corrosion protection for buried metallic objects. 3,687,609, Cl. 21-2.500.

Gold, Harold. System for installing three-port fluid elements in conduit circuits. 3,687,153, Cl. 137-112.000.

Goldie, Harry. Means for generating narrow microwave pulses. 3,688,214, Cl. 331-75.000.

Goldin, Morris, to Hughes Tool Co., Aircraft Division. Fully telescoped caseless cartridge. 3,687,077, Cl. 102-40.000.

Goldsberry, Paul E. Radix converter. 3,688,100, Cl. 235-155.000.

Goldsworthy, William W., to United States of America, Atomic Energy Commission. Pulse height analyzer with digital readout. 3,688,305, Cl. 340-347.0nt.

Golembeski, Ronald J.: *See—*
Cichoski, Sylvester A.; Damon, Paul H.; Golembeski, Ronald J.; and Lawler, William P., 3,687,778.

Golick, Alexander J.; Giuseponi, Ernest D.; and Randolph, Arthur J. Lumber sorting method. 3,687,178, Cl. 143-157.00e.

Gondolfe, James D.; Scalan, Ruth; and Ward, Jeanne A., to Polaroid Corporation. Diffusion transfer photographic elements comprising 5-hydroxy-4-azabenzimidazole and a second azabenzimidazole, and processes for their use. 3,687,660, Cl. 96-3.000.

Gonzalez, Roberts Barrera: *See—*
Rubio, Manuel Jesus, 3,687,685.

Goodall Semi-Metallic Hose & Mfg., Co.: *See—*
Marshall, Don J., 3,687,491.

Goode, John W.: *See—*
Friant, James E.; Pawlak, Daniel E.; and Goode, John W., 3,687,076.

Goodhart, Steven E.; and Channels, Alfred C., to Stanray Corporation. Load carrying vehicle. 3,687,321, Cl. 214-512.000.

Goodrich, John J.; and Waxlax, Chester E., to St. Regis Paper Company. Gusseted type bags. 3,687,356, Cl. 229-55.000.

Goodrich, Robert S. Transmitter cut-off. 3,688,040, Cl. 179-167.000.

Goodyear Tire & Rubber Company, The: *See—*
Appleby, Paul E.; Folden, Denver C.; and Stuhldreher, Paul R., 3,687,756.
Bricker, Carl E., 3,687,240.
Bricker, Carl E.; and Hillegass, Kenneth P., 3,687,247.
Folden, Denver C.; and Peck, Arland A., 3,687,779.
Johnson, Ernest D., 3,687,257.
Neumeister, Alvin W., 3,687,394.

Gorin, Everett: *See—*
Yavorsky, Paul M.; and Gorin, Everett, 3,687,614.

Gorin, Everett; and Yavarosky, Paul M., to Consolidated Coal Company. Desulfurization of flue gas. 3,687,615, Cl. 23-2.0sq.

Gorrell, Richard L.; and Gibson, Harold F., to Kickshaw, Inc. Multifilm projector. 3,687,536, Cl. 353-35.000.

Gorsky, Anatoly Vasilievich: *See—*
Zuev, Ivan Mikhailovich; Gorsky, Anatoly Vasilievich; Medovar, Boris Izrailevich; Anenko, July Georgievich Emely; Latashi, Jury Vadimovich; and Bogachenko, Alexei Georgievich, 3,687,189.

Goryachkin, Vladimir Ivanovich: *See—*
Nelen, Igor Mikhailovich; and Goryachkin, Vladimir Ivanovich, 3,687,628.

Goshima, Takeshi; Ohta, Shoji; and Imai, Nobuhiro, to Camon Kabushiki Kaisha. Mode switching system for magnetic recording-reproducing apparatus. 3,687,395, Cl. 242-180.000.

Goshima, Takeshi; and Iwawaki, Yasutaka, to Canon Kabushiki Kaisha. Apparatus for presenting audio and visual informations. 3,687,529, Cl. 352-27.000.

Goteborg, Fagerlund: *See—*
Apelstrand, Lennart; Goteborg, Fagerlund; and Jar, Stig, 3,687,308.

Gottfried, Reuter; and Ajfro, Fortunato S., to Bucyrus-Erie Company. Control circuit and lock valve for pivot axle lockout cylinders. 3,687,227, Cl. 180-1.00r.

Gould, Wallace E.: *See—*
Leopold, Wilbur R.; Hackman, Frank C.; Floren, Carl E.; and Gould, Wallace E., 3,687,492.

Gouret, Claude J.: *See—*
Fauran, Claude P.; Gouret, Claude J.; Raynaud, Guy M.; and Douzon, Colette A., 3,687,965.

Governale, Anthony J., to Elektra Systems, Inc. Cove lighting and heating fixture. 3,688,105, Cl. 240-51.110.

Grace, W. R., & Co.: *See—*
Ross, William C., 3,687,783.

Graef, Kurt, to Ford Motor Company. Ride height adjustment system for a motor vehicle. 3,687,481, Cl. 280-124.000.

Graf, Josef: *See—*
Schlegel, Franz; and Graf, Josef, 3,687,523.

Graff, Elmer, to Canadian Brass Limited. Copper compression ring. 3,687,494, Cl. 285-341.000.

Graham, James Leo, to Eastman Kodak Company. Coating methods of hardenable, multilayer arrangements. 3,687,707, Cl. 117-34.000.

Graham, Stephen S.; and Baumann, Martin. Display carton assembly. 3,687,278, Cl. 206-44.00r.

Grand, John Richard, III, to Du Pont de Nemours, E. I., and Company. Ultrasonic splicing apparatus. 3,687,787, Cl. 156-507.000.

Granieri, George J. Control system. 3,688,130, Cl. 307-252.00f.

Graulus, Marcel J. R.: *See—*
Fader, John H.; Keijzer, Johan H.; and Graulus, Marcel J. R., 3,687,480.

Gravon, Frank G. Dental balancing method and apparatus. 3,686,761, Cl. 32-19.000.

Graybill, Howard W. Conductive aluminum tubes for metal-enclosed, compressed gas-insulated conductors and the like. 3,688,015, Cl. 174-16.00b.

Grayson, Martin, to American Cyanamid Company. Acid chloride activators for hydrogen peroxide bleaching. 3,687,803, Cl. 162-74.000.

Grazzini, Giulio: *See—*
Nistri, Ugo; Busti, Benito; and Grazzini, Giulio, 3,687,915.

Great Salt Lake Minerals and Chemicals Corporation: *See—*
Neitzel, Ulrich E. G., 3,687,638.

Green, Alan L.: *See—*
Hasbrouck, Gene B.; and Green, Alan L., 3,687,088.
Hasbrouck, Gene B.; and Green, Alan L., 3,687,089.

Green, Raymond J., to General Motors Corporation. Anti-lock brake system with wheel speed comparator. 3,687,242, Cl. 188-181.00c.

Greenbaum, Sheldon B.; Weil, Edward D.; and Newcomer, Jack S., to Hooker Chemical Corporation. Halogen containing tricyclic compounds. 3,687,831, Cl. 204-158.000.

Greenberg, Frederick A.: *See—*
Hulit, Gerald W.; Greenberg, Frederick A.; Pirkey, Edward; and Tingquist, Stanley C., 3,687,191.

Greenwald, Harold A., to Garrett Corporation, The. Integral lubrication system. 3,687,233, Cl. 184-6.180.

Greenwood, David: *See—*
Dunnell, Alan Keith; Greenwood, David; and Wade, Thomas C. J., 3,686,723.

Grguric, Robert M.; and Wasen, Emerson J., to Hansen Manufacturing Company, The. Quick connect valve coupling. 3,687,161, Cl. 137-614.000.

Grider, Lyle D.; Hornagold, John T.; and Rathi, Ram N., to Bucyrus-Erie Company. Hydraulic system for single engine truck crane or the like. 3,686,862, Cl. 60-52.0he.

Griffiths Fuel Injection (Development) Limited: *See—*
Griffiths, Kenneth, 3,687,580.

Griffiths, Kenneth. Fuel injection apparatus for internal combustion engines. 3,687,375, Cl. 239-557.000.

Griffiths, Kenneth, to Griffiths Fuel Injection (Development) Limited. Apparatus capable of use as a pump or a motor. 3,687,580, Cl. 418-45.000.

Grime, Frank L.; and Downs, Arthur, to Keelavite Hydraulics Limited. Fluid tight annular seals. 3,687,465, Cl. 277-188.000.

Grimm, David W., to Amerace Esna Corporation. Self-locking one-piece metal castle nut. 3,687,182, Cl. 151-21.00b.

Grinchuk, Petr Stepanovich: *See—*
Sokolov, Evgeny Vyacheslavovich; Yashkin, Eduard Petrovich; Sysoev, Vadim Ivanovich; Kozhevnikov, Rady Savvich; Chabanov, Alim Ivanovich; Shinkarenko, Mikhail Ivanovich; Grinchuk, Petr Stepanovich; Fomin, Georgy Georgievich; and Rusaev, Vladimir Ivanovich, 3,686,907.

Grinsnpon, Semen Yakovlevich: *See—*
Paton, Boris Evgenievich; Medovar, Boris Ezrailevich; Chekotilo, Leonty Vasilievich; Pavlov, Leonid Viktorovich; Ariamonov, Viktor Leonidovich; Borisovich, Kiev, Alexandr; Kamensky, Leonid Alexeevich; Ishunkin, Veniamin Alexandrovich; Belenky, Alexandr Mikailovich; Shevisov, Anatoly Ivanovich; Grinsnpon, Semen Yakovlevich; Sysenko, Anatoly Pavovich; Dubinsky, Rudolf Solomonovich; Papav, Valery Georgievich; and Toschev, Alexandr Mikhaivich, 3,687,188.

Griot, Rudolf G.: *See—*
Cooke, George A.; and Griot, Rudolf G., 3,687,973.

Gripe, Maxwell L., to Bendix Corporation, The. Electrical control for vacuum pump. 3,686,861, Cl. 60-51.000.

Grob, Karl; Oertter, Josef; and Wiesner, Paul, to Metallgesellschaft AG. Purification process. 3,687,844, Cl. 210-23.000.

Groothoff, Adriaan Jacob: *See—*
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Grosman, Erikh Ruvimovich: *See—*
Dyskin, Ernest Matveevich; Raevsky, Georgy Vladimirovich; Biletsky, Semen Mikhailovich; Burmenko, Eduard Jurievich; Grosman, Erikh Ruvimovich; Satanovsky, Abram Lazarevich; Kremnev, Oleg Alexandrovich; Zhuravlenko, Viktor Yakovlevich; and Protsyshin, BorisNikolaevich, 3,687,434.

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Grove Manufacturing Company: *See—*
Ghysels, David G., 3,686,765.

Grubel, Klaus: *See—*
Rosenmund, Peter; and Grubel, Klaus, 3,687,962.

Grubelic, Nicholas T. Massaging machine. 3,687,133, Cl. 128-58.000.

Grubstad, Alfred. Method of rendering extremely flexible a relatively rigid and brittle sheet, panel or elongated body of cellular plastic material having compressible foamed cells. 3,687,774, Cl. 156-324.000.

Grunewalder, Werner. Process for flameproofing textile material. 3,687,720, Cl. 117-137.000.

Gruswitz, Frank A., to Emerson Electric Co. Baffle for forced draft gas burner. 3,687,600, Cl. 431-114.000.

Guckel, Gerhart A., to Dale, James, Corporation. Conveying system. 3,687,261, Cl. 198-25.000.

Guenther, Wolfgang: *See—*
Wehren, Peter; Vollmer, Klaus; Guenther, Wolfgang; and Kick, Rolf, 3,687,790.

Guglielmetti, Leonardo: *See—*
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Guichard, Jean-Claude: *See—*
Rabilloud, Pierre; and Guichard, Jean-Claude, 3,686,836.

Guichet, Niles F. Centric relating device. 3,686,755, Cl. 32-32.000.

Guilfoyle, Edward C., Sr. Coupling devices. 3,687,499, Cl. 287-127.00r.

Guinn, Kenneth F. Flyable toy rotor apparatus. 3,687,403, Cl. 244-155.00r.

Gujer, Hans. Filter conveyor band for a continuously operating filter press. 3,687,295, Cl. 210-324.000.

Gulf & Western Industrial Products Company: *See—*
Helrigel, Robert A.; and Ward, Roderick K., 3,687,069.

Gulf General Atomic Incorporated: *See—*
Magers, Leroy; Riddle, John H.; and Eitzen, August D., 3,687,380.

Gulf Research & Development Company: *See—*
Mori, Ernest A., 3,687,205.

Gull, Karl-Heinz; and Marke, Berno-Dieter, to Hoesch Aktiengesellschaft. Arrangements for sensing and correcting the level of a body. 3,687,483, Cl. 280-124.00f.

Gunsher, Jeffrey A.: *See—*
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Gunther, Peter: *See—*
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Gurski, Frank Joseph, Jr.: *See—*
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Gustafson, Walter R.; McMillen, William H.; Kemper, Jackson, Jr.; and Newman, Leonard, said Newman assor. to Loral Corporation and said Gustafson, said McMillen assor. to America, Navy United States of America, Navy. Integrated display system for combat aicraft. 3,688,312, Cl. 343-6.00r.

Gutmann, Hugo; Marbet, Roman; and Schwieter, Ulrich, to Hoffmann-La Roche Inc. Isoprenoid compounds and a process for producing the same. 3,687,990, Cl. 260-413.000.

Gwilliam, Ralph Derek, to English Clays Lovering Pochin & Company Limited. Tube pressure filters. 3,687,287, Cl. 210-79.000.

Gwyn, Childress B., Jr., to Contacts, Incorporated. Closing wire terminals. 3,686,746, Cl. 29-488.000.

H. R. Electronics Company: *See—*
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Haag, Albrecht; and Siefert, Roland. Timepiece with sweep second hand and hand-setting means. 3,686,885, Cl. 58-85.500.

Haas, Friedrich: *See—*
Witte, Josef; Haas, Friedrich; and Marwede, Gunter, 3,687,889.

Haas, Werner E. L.; Adams, James E.; and Flannery, John B., Jr., to Xerox Corporation. Electro-optic liquid crystal system with polyamide resin additive. 3,687,515, Cl. 350-150.000.

Hackett, Robert J. Sampling devices and powder diffusion containers for use with molten metal. 3,686,949, Cl. 73-354.000.

Hackman, Frank C.: *See—*
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Hagan, Edward Francis: *See—*
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Hager, Alois, to Vereinigte Osterreichische Eisen- und Stahlwerke Aktiengesellschaft. Process for refining liquid pig iron in a spray refining plant and spray refining plant for carrying out such process. 3,687,435, Cl. 266-34.00t.

Hagino, Hiroshi: *See—*
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Hahn, Willi: *See—*
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Hall, Richard H.: *See—*
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Haller, Hans R. Hydraulic speed control for air cylinders. 3,687,013, Cl. 92-8.000.

Halmi, Dezsoe, to General Signal Corporation. Flow metering devices of the pressure differential producing type. 3,686,946, Cl. 73-213.000.

Halpern, Alfred, to Synergistics, Inc. Solid iodophor cleansing compositions. 3,687,855, Cl. 252-106.000.

Halvorsen, Jacob Schoning, to Rapp Fabrikker A/S. Method and apparatus for hauling underwater ropes and the like. 3,687,418, Cl. 254-175.700.

Hammann, Ingeborg: *See—*
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Hammond, [illegible]nes Woodrow, to AMP Incorporated. Method of making electrical leads. 3,686,752, Cl. 29-628.000.

Handler, Elliot; Ryan, John W.; Lemkin, Jack L.; and Dunn, Ralph, to Mattel, Inc. Toy-containing locket. 3,686,894, Cl. 63-19.000.

Hands, Clifford H. G.: *See—*
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Hangland, Earl W. Device for loading a snowmobile onto a truck. 3,687,314, Cl. 214-83.240.

Hanrahan, Dennis P.: *See—*
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Hansen, Gerhard. Draw-cord bags. 3,687,357, Cl. 229-63.000.

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Hansley, Virgil L.; Schott, Stuart; and Moormeier, Louis F., to National Distillers and Chemical Corporation. Method of preparing zinc hydrosulfite. 3,687,619, Cl. 423-109.0on.

Hanson, Alden W.; Evani, Syamalarao; and Drake, Lewis R., to Dow Chemical Company, The. Anhydride polymer animation process. 3,687,906, Cl. 260-78.50t.

Hara, Ei; and Yokoyama, Tatsuichi, to Tamaggwa Kikai Kinzoku Kabushiki Kaisha. Powder-forming press. 3,687,586, Cl. 425-78.000.

Harao, Norio; and Yano, Motohiro, to Tokyo Shibaura Electric Co., Ltd. Cathode ray tube with a continuous transparent jection and fiber optics section. 3,688,144, Cl. 313-92.0lf.

Harris, Calvin E.: *See—*
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Harris Intertype Corporation: *See—*
Rosin, Seymour, 3,687,025.

Harris, Leonard F., to United States Steel Corporation. Apparatus for machining blast furnace hopper ring in place on the furnace. 3,687,007, Cl. 90-12.000.

Harris, Melvin: *See—*
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Harrison, Henry. Ink distributing means comprising a bundle of skewed rollers. 3,687,073, Cl. 101-350.000.

Harrison, Stanley, to KEV Electronics Corporation. Scanning system for ion implantation accelerators. 3,688,203, Cl. 328-229.000.

Hart, Charles G.: *See—*
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Hart, James L.: *See—*
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Hartmann, Hans Joerg; Leonhard, Karl Wilhelm; Ohlinger, Manfred; and Schwarzmann, Matthias. Manufacture of highly coercive chromium dioxide. 3,687,851, Cl. 252-62.510.

Hartmann, Job-Werner; Hartmann, Hans Joerg; Schnell, Georg; Falk, Roland; and Balz, Werner. Magnetic recording media. 3,687,725, Cl. 117-235.000.

Hartmann, Ludwig. Wear resistant nonwoven fabric. 3,687,712, Cl. 117-68.000.

Hartridge, Leslie, Limited: *See—*
Taylor, Cecil I., 3,686,797.

Hartzell Corporation: *See—*
Dahl, Christian W., 3,686,776.

Harz, Willi, to Hawera Hartmetall-Werkzeugfabrik Gesellschaft mit beschrankter Haftung. Rock drill. 3,687,207, Cl. 175-410.000.

Harza, Richard D. System for completely disposing of refuse. 3,686,889, Cl. 62-62.000.

Hasbrouck, Gene B.; and Green, Alan L., to Corry Jamestown Corporation. Drafting table. 3,687,088, Cl. 108-2.000.

Hasbrouck, Gene B.; and Green, Alan L., to Corry Jamestown Corporation. Drafting table with improved vertical control mechanism. 3,687,089, Cl. 108-2.000.

Hatakeyama, Takanobu: *See—*
Mitsui, Nobuo; Hatakeyama, Takanobu; and Komuro, Katsu, 3,687,235.

Haubein, Albert H., to Hercules Incorporated. O,O-Di-(C1-C2 alkyl) S-[1l(C2-C20 acyl) hydantoin-3-yl]methyl phosphorothioates. 3,687,966, Cl. 260-309.500.
Hauni Werke Korber & Co., KG: *See—*
Wahle, Gunter, 3,687,316.
Hausler, Alfred: *See—*
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Haussler, Hubert, to Beringer-Hydraulik R. Beringer & Co. Control valve block for hydraulically operated elevators. 3,687,011, Cl. 91-459.000.
Havens, Richard Calvin, to Motorola, Inc. Electrically and mechanically tunable microwave power oscillator. 3,688,219, Cl. 331-107.00r.
Haviland, Merrill L.: *See—*
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Hawkins, Clay Earnest. Portable film holder. 3,688,108, Cl. 250-50.000.
Hayakawa, Yoshihide; and Satomura, Masato, to Fuji Photo Film Co., Ltd. Process for forming polymer images. 3,687,667, Cl. 96-48.00r.
Hayakawa, Yosikazu: *See—*
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Hayes, Charles W. Spaced multi-wall construction unit. 3,686,811, Cl. 52-223.000.
Hearn, Charles L.; and Relph, James L., to Cities Service Oil Company. High density miscible fluid injection with aquifer encroachment. 3,687,198, Cl. 166-274.000.
Hebeler, Herbert A.: *See—*
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Heitzer, Heinrich, to Demag-Lauchhammer Maschinenbau und Stahlbau G.m.b.H. Machine for leveling a mixed bed dump. 3,687,265, Cl. 198-36.000.
Hell, Rudolf; Wellendorf, Klaus; Koll, Roman; and Lindemann, Eckhard, to Kommanditgesellschaft Dr.-Ing. Rudolf Hell. Method of composing half-tone pictures by means of electronic phototype setters. 3,688,033, Cl. 178-15.000.
Heller, Harold: *See—*
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Helrigel, Robert A.; and Ward, Roderick K., to Gulf & Western Industrial Products Company. Shut height counter drive for presses. 3,687,069, Cl. 100-257.000.
Helton, Marion P. Pipe laying apparatus. 3,686,888, Cl. 61-72.100.
Henderson, Gary A. Anti-cribbing device for horses. 3,687,112, Cl. 119-29.000.
Henderson, John Franklin, to Litton Business Systems, Inc. Logic processing system. 3,688,261, Cl. 340-146.1ab.
Hendry, James W.; Kimball, Jack E.; and Chin, Charles L. D., to Borg-Warner Corporation. Apparatus for flowing gas into plasticized material. 3,687,582, Cl. 18-30.0tm.
Henkel & Cie G.m.b.H.: *See—*
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Henning, Harley Barry, to Raytheon Company. Optical correction apparatus. 3,688,101, Cl. 235-181.000.
Henry, Ralph E.; and Kohanski, Robert F., to Dresser Industries, Inc. Packing for compressors, pumps or the like. 3,687,577, Cl. 417-437.000.
Hensley, Albert L., Jr., to Standard Oil Company (Indiana). Hydrocracking catalyst. 3,687,869, Cl. 252-455.00z.
Hensley, Billy R. Vertically drain flat structures. 3,687,021, Cl. 94-9.000.
Henson, Artel R.: *See—*
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Henson, James H.; and Henson, Artel R., to Disco Engineering, Inc. Vestibule air curtain door system. 3,687,053, Cl. 98-33.000.
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Herberger, Robert J., to Eastman Kodak Company. Film cartridge. 3,687,036, Cl. 95-31.00r.
Hercules Incorporated: *See—*
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Hideo, Hashimoto, to Kabushiki Kaisha Ricoh. Form feeding device with memory means. 3,687,540, Cl. 355-14.000.
Hikida, Ryotaro; Awano, Taikichi; Danno, Atsushi; and Kojima, Yoshiro, to Kabushiki Kaisha Toyota Chuo Kenkyusho and Toyota Shatai Kabushiki Kaisha. Roll forming apparatus. 3,686,917, Cl. 72-187.000.
Hilberg, Wolfgang, to Licentia Patent-Verwaltungs G.m.b.H. Data storage system. 3,688,279, Cl. 340-173.0sp.
Hilgemann, Willi, to Windmoller & Holscher. Apparatus for coiling moving webs of paper, plastics film or other sheet materials. 3,687,387, Cl. 242-56.00a.
Hill, Donald Everett; and Walker, Robert G., to Industra Products, Inc. Coil transfer tool. 3,686,735, Cl. 29-205.00r.
Hill, William G.; and Bromwich, Robert A. C., to Foster Wheeler Corporation. Welding apparatus for welding an extension piece to a tube. 3,688,076, Cl. 219-125.00r.
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Hitosugi, Takeo. Universal automatic bending press. 3,686,952, Cl. 72-396.000.

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Holdrege, Charles Truman, to Bristol-Myers Company. Synthetic cephalosporins. 3,687,949, Cl. 260-243.00c.

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Holt, Kenneth, to Foster Wheeler Corporation. Process steam heaters. 3,687,116, Cl. 122-356.000.

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Jacyno, Anthony; and Holther, Grover P., 3,688,138.

Holub, Elvin G. Automatic gear shifting device. 3,687,248, Cl. 192-3.540.

Holz, George E., to Burroughs Corporation. Method of aging a display panel. 3,687,513, Cl. 316-20.000.

Hon Industries Inc.: *See—*
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Honeywell, Inc.: *See—*
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Hong, Kyonghi. Impedance protector. 3,688,227, Cl. 335-7.000.

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Greenbaum, Sheldon B.; Weil, Edward D.; and Newcomer, Jack S., 3,687,831.

Hopkins, John D.; McLaren, James C.; Johnson, Ronald A.; and Offer, Robert J., to Walker Manufacturing Company. Dual media air filter. 3,686,837, Cl. 55-487.000.

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Hori, Shin; Inoue, Tomiyoshi; Yamamoto, Shozo; Tatara, Kazuo; Kitagawa, Mashiro; Watanabe, Masaru; Okada, Yukihiko; and Negishi, Naoki, to Kogyo Kaihatsu Kenkyusho. Apparatus for eliminating diluted sulphur oxides from combustion exhaust gases. 3,686,832, l. 55-179.000.

Horiuchi, Tatsuo: *See—*
Matsui, Isamu; Nagasawa, Isao; Horiuchi, Tatsuo; Uchida, Hiroshi; and Uehara, Masao, 3,687,382.

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Hornig, Lothar Heinz; deceased (by Hornig, Anneliese, nee Munich; co-heiress); and Arpe, Hans-Jurgen, to Farbwerke Hoechst Aktiengesellschaft. Gold hydroxydiacetate and process for its manufacture. 3,687,993, Cl. 260-430.000.

Hornsby, Guyton E. Air bag suspension system for railway vehicles. 3,687,439, Cl. 267-65.000.

Hornung, Elmer H.: *See—*
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Hoshino, Yutaka; Iwaki, Yoshikazu; Matsukawa, Koshiro; Nakada, Akira; Sato, Fumio; and Uno, Kazuo, to Nippon Soda Co., Ltd. Continuous process for the preparation of living polymer. 3,687,913, Cl. 260-82.100.

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Houlihan, William J.; and Nadelson, Jeffrey. Substituted dibenz [a,h] azulenones and 8-(oxa or thia) substituted dibenz [a,h] azulenones. 3,687,975, Cl. 260-327.00b.

Hover, Borre, to A/S Norsk Viftefabrikk. Ceiling structure II. 3,687,056, Cl. 98-40.00l.

Howard, Joseph D.: *See—*
Howard, Joseph D.; and Brobeck, William M. (said Brobeck assor. to said), 3,688,087.

Howard, Joseph D.; and Brobeck, William M., said Brobeck assor. to said Howard, Joseph D. Method and apparatus for handling materials. 3,688,087, Cl. 235-61.90r.

Howard, Walter B.: *See—*
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Howlett, Donald L., to Texaco Inc. Amplifier system. 3,688,250, Cl. 340-15.5dp.

Howmet Corporation: *See—*
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Hruda, Robert M., to Westinghouse Electric Corporation. Electronic power regulation control device for providing constant electrical powers to a load of varying impedance. 3,688,204, Cl. 328-267.000.

Huang, Ching Yun: *See—*
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Huang, Denis K., to Westvaco Corporation. Alakali-swellable polyvinyl acetate grafted latexes comprising vinyl acetate, an aliphatic ester of an unsaturated monocarboxylic acid, styrene and an unsaturated monocarboxylic acid. 3,687,884, Cl. 260-29.6rw.

Hubbell, Harvey, Incorporated: *See—*
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Huber, Wolfgang, to Diagnostic Data, Inc. Orgotein isolation process employing single ion exchange resin having both acidic and basic groups. 3,687,927, Cl. 260-113.000.

Hugenholtz, Eduard Herman, to U.S. Philips Corporation. Frequency synthesis system. 3,688,212, Cl. 331-4.000.

Hughes, Robert R.; and Marjon, Pierre L., to Chemical Specialties Manufacturing Corporation. Foam extractor for rotary scrubber. 3,686,707, Cl. 15-385.000.

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Hugyecz, Matyas; and Richmond, Carroll S., to Stromberg-Carlson Corporation. Stored energy signalling circuit. 3,688,038, Cl. 179-84.00r.

Hulit, Gerald W.; Greenberg, Frederick A.; Pirkey, Edward; and Tingquist, Stanley C., to Howmet Corporation. Vacuum casting furnace. 3,687,191, Cl. 164-258.000.

Hull, Francis R. Regenergative ranking cycle power plant. 3,686,867, Cl. 60-94.000.

Humbert , Marvin H., to Cedar Rapids Engineering Company. Two-plane bore leveling device. 3,686,768, Cl. 33-185.00r.

Humburger, Siegbert; and Hahn, Willi, to Farbenfabriken Bayer Aktiengesellschaft. Process for the preparation of isatoic anhydride. 3,687,951, Cl. 260-244.00a.

Hummel, Gunter; and Scheer, Erich. Digital clock with alarm. 3,686,879, Cl. 58-38.000.

Humphries, Darral V., to Bethlehem Steel Corporation. Corrosion resistant plastic composite and method of making. 3,687,798, Cl. 161-156.000.

Hunter, William A., to Chrysler Corporation. Overfill limiting apparatus for fuel tanks. 3,687,335, Cl. 220-85.0vr.

Huntington, Richard L. Multiple compartment cross flow absorber. 3,686,830, Cl. 55-233.000.

Hurt, Zeno, to Agon Uhrenfabrik Kobert Triebold A. G. Watch. 3,686,884, Cl. 58-127.00r.

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Imamura, Makoto; and Sato, Ikuo, to Tokyo Shibaura Electric Co., Ltd. Apparatus for detecting the volume of traffic. 3,688,308, Cl. 340-38.00l.
Imoto, Minoru; Takemoto, Kiichi; and Huang, Ching Yun. Process for preparing a graft-copolymerized cellulose. 3,687,878, Cl. 260-17.400.
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Inoue, Tomiyoshi: *See—*
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Ishiguro, Tatsuo, to Nippon Electric Company, Limited. Digital signal reception system. 3,688,039, Cl. 178-88.000.
Ishihara, Satoshi, to Teijin Seiki Company, Ltd. Yarn traversing mechanism. 3,687,383, Cl. 242-43.000.
Ishii, Takami; Sugiura, Shotaro; and Takikawa, Naohisa, to Ube Industries, Ltd. Process for the production of heat resistant oxymethylene polymer. 3,687,898, Cl. 260-67.0fp.
Ishiwata, Mamoru: *See—*
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Ismail, Roshdy, to Dynamit Nobel Aktiengesellschaft. Halogenphenoxy-s-triazine derivatives having improved solubility. 3,687,952, Cl. 260-248.0cs.
Israel, Michael G.: *See—*
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Itjima, Taizo; and Mori, Kenichi, to Kogyo Gijutsuin, a/k/a Industrial Science and Technology Ministry of International Trade and Industry, Agency of and Tokyo Shibaura Denki Kabushiki Kaisha, a/k/a Tokyo Shibaura Electric Co., Ltd. Pattern identification ystems operating by the multiple similarity method. 3,688,267, Cl. 340-146.30q.
Ito, Masaharu, to Canon Kabushiki Kaisha. Interchangeable lens capable of change over between automatic and manual stop operations. 3,687,047, Cl. 95-64.00d.
Ivey, Curtis L.; Vance, Alvin M.; and Eisele, Hermann, to Westinghouse Electric Corporation. Slave current control system for a plurality of electric motors coupled to a common load. 3,688,167, Cl. 318-45.000.
Ivy, James R.: *See—*
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Iwahashi, Kenji, to Shimadzu Seisakusho Ltd. Spectroscopic measurement system using rotating patterned grill members. 3,687,554, Cl. 356-74.000.
Iwai, Isseu; Kishida, Yukichi; Hiroaka, Tetsuo; and Nakamura, Norio, to Sankyo Company Limited. 3-Hydroxyisoxazole derivatives. 3,687,968, Cl. 260-307.00h.
Iwaki, Yoshikazu: *See—*
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Jabsen, Felix S. Welding nozzle. 3,688,079, Cl. 219-136.000.
Jackson, Aldrich L., to Dynasort Corporation. Silverware washing and handling apparatus. 3,687,264, Cl. 198-33.0aa.

Jackson, Richard H.; and Schulz, George H., to Gits Bros., Mfg., Co. Seal. 3,687,464, Cl. 277-153.000.
Jackson, Wilbur. Tufting machine stop motion embodying light beam and sensor with triggering circuit responding to yarn breaks. 3,687,095, Cl. 112-79.00r.
Jacobs, Theodore A.: *See—*
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Jaconette, Frank C., to Hubbell, Harvey, Incorporated. Electrical device having an improved mounting strap. 3,688,239, Cl. 339-14.00r.
Jacyno, Anthony; and Holther, Grover P., to Murphy, G. W., Industries, Inc. Subframe for a power tool employing two plate-like elements with cut out portions for motor and transmission. 3,688,138, Cl. 310-50.000.
Jade Corporation: *See—*
Stiener, Kurt; and Berger, Allen, 3,688,074.
Jahnsman, William E. Miniature camera. 3,687,031, Cl. 95-11.000.
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James, Robert C.; Hart, Charles G.; Rogers, John E.; and Safranski, Richard W. Auger filler and control therefor. 3,687,250, Cl. 192-12.00d.
James, Varnell L.: *See—*
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Jamieson, John. Method of inscribing cemetery memorials. 3,687,750, Cl. 156-63.000.
Jansen, Constant Gijsbertus Johannes; Compaan, Klaas; and Venema, Albertus, to U.S. Philips Corporation. Device having an electric discharge tube comprising a field emission cathode, and discharge tube destined for such a device. 3,688,151, Cl. 313-348.000
Jansen, Georg: *See—*
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Jarvik, Robert K. Repeating ligature gun. 3,687,138, Cl. 128-326.000.
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Jennings, Robert R., to Dow Chemical Company, The. Process for the secondary recovery of petroleum. 3,687,199, Cl. 166-274.000.
Jensen, Alan K.; and Desilets, Richard L., to Transaction Systems, Incorporated. Self clocking digital data systems employing data-comparison codes and error detection. 3,688,260, Cl. 340-146.10r.
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Johansson, Bengt; and Nilsson, Erland, to Allmanna Svenska Elektriska Aktiebolaget. Reigniting spark gap device including a flow-through channel. 3,688,155, Cl. 315-36.000.
Johns-Manville Corporation: *See—*
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Johnson, Bruce K., to Polaroid Corporation. Exposure control mechanism with mechanical flash synchronization. 3,687,034, Cl. 95-11.50r.
Johnson, Donald W., to Snyder Manufacturing Company, Inc. Small animal anesthesia machine. 3,687,137, Cl. 128-188.000.
Johnson, Ernest D., to Goodyear Tire & Rubber Company, The. Threshold comb for passenger conveyor. 3,687,257, Cl. 198-16.000.
Johnson, Lauren L., to General Motors Corporation. Commuting reactor for a three-phase inverter. 3,688,182, Cl. 321-45.00c.
Johnson, Ray M. Continuous microwave heating or cooking system and method. 3,688,068, Cl. 219-10.550.
Johnson, Robert N., to Union Carbide Corporation. Polymerization of olefins with silane modified catalyst system. 3,687,920, Cl. 260-88.20r.
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Johnston, James R.; and Moertel, George B., to Textron Inc. Slide fastener stop. 3,686,719, Cl. 24-205.11f.
Johnstone, Cyril Patrick, to North American Car Corporation, mesne. Cleaning apparatus. 3,687,369, Cl. 239-102.000.
Jonannes, Adrianus; and Hoogeboom, Theodorus, to Brunot, William Turner. Control device for an oil a gas operated diesel engine. 3,687,119, Cl. 123-27.0ge.
Jonas, David Andrew; and Owen, William John. Organosilicon compounds. 3,687,995, Cl. 260-448.80r.
Jones, Clarence L., to National Cash Register Company, The. Optical bar code parallel printer. 3,687,256, Cl. 197-1.00r.
Jones, George M.: *See—*
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Jordan, Robert L. Oil stick wipers. 3,686,702, Cl. 15-210.00b.
Jorgensen, Pierre, to Saint-Gobain Techniques Nouvelles. Transistor recording circuit with commertron. 3,688,284, Cl. 340-174.01h.
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Joyce, Edgar: *See—*
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Kahn, Leonard R., to Kahn Research Laboratories, Inc. Communication system with selection means for determining the modulation mode of a received signal. 3,688,197, Cl. 325-315.000.
Kahn Research Laboratories, Inc.: *See—*
Kahn, Leonard R., 3,688,197.
Kaiser Industries Corporation: *See—*
Wortman, Stephen, 3,687,436.
Kakalios, George N. Collapsible bed. 3,686,697, Cl. 5-152.000.
Kakinuma, Atsushi: *See—*
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Kalajian, Edward. Container closure. 3,687,352, Cl. 229-7.00r.
Kali-Chemie Aktiengesellschaft: *See—*
Kuhn, Konrad; and Boedecker, Manfred, 3,687,297.
Kal'auskas, Gasparas. Welding head apparatus. 3,688,069, Cl. 219-60.00a.
Kalle Aktiengesellschaft: *See—*
Klenk, Ludwig; Kaempgen, Dieter; Kersting, Rolf; and Porrmann, Herbert, 3,687,772.
Kalopissis, Gregoire: *See—*
Charle, Roger; Zviak, Charles; and Kalopissis, Gregoire, 3,686,701.
Kamei, Tatsya: *See—*
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Kamensky, Leonid Alexeevich: *See—*
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Nakamachi, Hideo; Kamiya, Kazuhide; Nishikawa, Masao; and Fujii, Shoichiro, 3,687,932.
Kamiya, Minoru. Three dimensional sound recording and reproducing system. 3,687,461, Cl. 274-38.000.
Kamo, Roy, to Cummins Engine Company, Inc. Combustion aid for a compression ignition engine. 3,687,122, Cl. 123-122.00g.
Kamor Products, Inc.: *See—*
Martinez, Eugene, 3,687,524.
Kamp, Artur F.: *See—*
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Kanavets, Ivan Fedorovich: *See—*
Sokolov, Anatoly Danilovich; Danilkin, Nikolai Nikiforovich; and Kanavets, Ivan Fedorovich, 3,686,933.
Kanazu, Siro. Barrel for use in surface-treatment of metal. 3,687,421, Cl. 259-81.00r.
Kandiah, Kathirkamathamby, to United Kingdom Atomic Energy Authority. Negative feedback amplifier with high slow rate. 3,688,208, Cl. 330-13.000.
Kane, Richard E.; and Hess, Robert L. Compressed-gas circuit interrupter with split current-transformer housing for ready disassembly. 3,688,061, Cl. 200-148.00r.
Kanegafuchi Boseki Kabushiki Kaisha: *See—*
Ohno, Yoshio; Eda, Korekiyo; Tamamura, Toshio; and Yamasaki, Kosaburo, 3,687,784.
Kaneko, Katsumi, to Kabushiki Kaisha Koparu. Lens shutter for single-lens reflex camera. 3,687,046, Cl. 95-63.000.
Kao, Peter T.: *See—*
Cumbo, Peter E.; Hart, James L.; Kao, Peter T.; and Negus, George T., 3,687,751.
Kaplan, Joel R.; and Huste, Arno. Method for producing enhanced soluble coffee. 3,687,683, Cl. 99-71.000.
Kapur, Brij L.; and Mausner, Marvin L. Inhibition of color formation during sulfation of ethoxylated alcohols and alkyl phenols. 3,687,999, Cl. 260-458.000.
Karge, Joseph R.: *See—*
Palmer, Neil R.; Karge, Joseph R.; and Erickson, Kenneth W., 3,688,228.
Karklys, Joseph; and Becker, Stephen A., to Whirlpool Corporation. Reversing motor system for a laundry appliance. 3,688,170, Cl. 318-207.00a.
Kasai, Toshiyuki: *See—*
Yamamoto, Tadaaki; and Kasai, Toshiyuki, 3,687,555.
Kashio, Toshio. Distortion compensation in ink jet recording. 3,688,034, Cl. 178-30.000.
Katayama, Shizuo; Matsukawa, Hiroharu; Yamato, Masaya; and Matsuyama, Junichi, to Fuji Photo Film Co., Ltd. Oil-containing microcapsules and method for their production. 3,687,865, Cl. 252-316.000.
Katsuragawa Denki Kabushiki Kaisha: *See—*
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Katz, Klaus: *See—*
Forster, Hans-Joachim M.; and Katz, Klaus, 3,687,014.
Katz, Robert. Process and apparatus for heat and/or mass transfer by direct contact. 3,687,425, Cl. 261-114.00r.
Katzman, Lawrence; and Briggin, Edward. Vaporizer having a fill hole. 3,687,424, Cl. 261-72.000.
Kaumle, Fritz: *See—*
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Kawagoe, Hiroto: *See—*
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Kawahara, Shigemi: *See—*
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Kawakami, Tadashi, to Nippon Kogaku K. K. View finder system for a single lens reflex camera. 3,687,038, Cl. 95-42.000.
Kawecher, Ralph William; and Platt, John Robert, to American Can Company. Composite container. 3,687,351, Cl. 229-3.100.
Kayashima, Kouzo: *See—*
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Keelavite Hydraulics Limited: *See—*
Grime, Frank L.; and Downs, Arthur, 3,687,465.
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Fader, John H.; Keijzer, Johan H.; and Graulus, Marcel J. R., 3,687,480.
Keith, Carl D.; Haley, Alfred J., Jr.; and Kero, Robert M., to Engelhard Minerals & Chemicals Corporation. Electrolytic anode. 3,687,724, Cl. 117-230.000.
Keller, Wolfgang, to Siemens Aktiengesellschaft. Device for crucible-free, floating-zonemelting a crystalline member. 3,688,006, Cl. 13-1.000.
Kellwood Company: *See—*
Weimer, Gerald A., 3,687,125.
Kelsey-Hayes Company: *See—*
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Kemper, Jackson, Jr.: *See—*
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Kennecott Copper Corporation: *See—*
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Kennedy, Alexander W.; and Malkin, Irving, to Diamond Shamrock Corporation. Coated metal and method. 3,687,739, Cl. 148-6.200.
Kennelly, Robert W., to Westherhead Company, The. Welding head with detachable power handle. 3,688,071, Cl. 219-60.00a.
Kern, Kenneth E.: *See—*
Patrick, Alan E.; and Kern, Kenneth E., 3,686,878.
Kern, Neil C., to Motorola, Inc. Combined CW and pulse tracking system. 3,688,313, Cl. 343-7.300.
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Kes, William: *See—*
Bateman, Coates F.; and Kes, William, 3,688,291.
Kesling, Peter C. Orthodontic appliance. 3,686,758, Cl. 32-14.00a.
Kessel, Heinrich: *See—*
Macrander, Karl; and Kessel, Heinrich, 3,687,307.
KEV Electronics Corporation: *See—*
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Kevso, Robert E., to Dowley Manufacturing, Inc. Oil filter remover. 3,686,984, Cl. 81-64.000.
Kick, Rolf: *See—*
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Kickshaw, Inc.: *See—*
Gorrell, Richard L.; and Gibson, Harold F., 3,687,536.
Kiehs, Karl; Koenig, Karl-Heinz; and Fischer, Adolf. Ethyl N-cyclohexyl N-propargyl-thiolcarbamate as a herbicide. 3,687,997, Cl. 260-455.00a.
Kigane, Koji; Yamada, Shinichi; and Koga, Kazuo, to Teijin Limited. Artificial leather having polyurethane surface finish layer. 3,687,715, Cl. 117-76.00r.
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Kimball, Jack E.: *See—*
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Kimberly-Clark Corporation: *See—*
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Kinag GmbH: *See—*
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Kinno, Akira. Timer circuit of an automatic telephone answering apparatus. 3,688,043, Cl. 179-6.00r.
Kirkhof Manufacturing Corporation: *See—*
Medendorp, Roger L., 3,687,594.
Kirn, Manfred; Hettich, Alfred; Hahner, Reinhard; Stroezel, Reinhold; and Burklin, Max, to Bosch, Robert, G.m.b.H. Change speed transmission with shiftable shaft. 3,686,957, Cl. 74-371.000.
Kishida, Yukichi: *See—*
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Kizilos, Apostolos P., to Honeywell Inc. Digital absolute pressure ratio indicator. 3,686,951, Cl. 73-388.00r.
Klatte, Henry B.: *See—*
DiNoia, Emanuel J.; Klatte, Henry B.; and Breunich, Theodore R., 3,686,708.
Klein, Gerhart P.; and Wingood, Ivan L., Jr., to Mallory, P. R., & Co., Inc. Anodes for solid electrolytic capacitors. 3,688,161, Cl. 317-230.000.
Klein, Hans-Christof; Beller, Hans; and Schrader, Gert, to Teves, Alfred, Maschinen-und Armaturenfabrik KG. Electrical warning system for vehicular brake installations. 3,688,255, Cl. 340-52.00c.
Klein, Paul R. Sound-operated, yes-no responsive switch. 3,688,126, Cl. 307-116.000.
Klenk, Ludwig; Kaempgen, Dieter; Kersting, Rolf; and Porrmann, Herbert, to Kalle Aktiengesellschaft. Process for the production of a laminated sheet material. 3,687,772, Cl. 156-242.000.
Kling, Adam, to Siemens Aktiengesellschaft. Timing mechanism for printing apparatus employing flying printing action. 3,687,071, Cl. 101-93.00c.
Klockner-Humboldt-Deutz Aktiengesellschaft: *See—*
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Klockner-Werke AG: *See—*
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Klompas, Nicholas, to General Electric Company. Rotor with variable angle blades. 3,687,569, Cl. 416-156.000.
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Klox, Inc.: *See—*
Verner, Dalton R., 3,688,073.
Klug, Hans, to Meyer, Wilhelm, Firma. Lock for double-barreled firearm. 3,686,786, Cl. 42-42.000.
Knapp, Earle L., to Armco Steel Corporation. Apparatus for finishing metallic coating on a ferrous strand. 3,687,105, Cl. 118-405.000.
Knell, Martin: *See—*
Dexter, Martin; and Knell, Martin, 3,687,892.
Knestele, Leopold. Device for cleaning carpeted floors. 3,686,699, Cl. 15-50.00r.
Kniebes, Duane V.; Chisholm, John Adrian; and Stubbs, Robert C., to Institute of Gas Technology. Method for measuring odor level in natural gas. 3,686,930, Cl. 73-23.100.
Knight, John C.: *See—*
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Knoblach, John C.; and Shepard, Ray M., to Fairfield Manufacturing Company, Inc., mesne. Plantetary reduction wheel hub. 3,686,978, Cl. 74-801.000.
Kobayashi, Akihiro, to Nittan Company, Limited. Ionization smoke detector. 3,688,119, Cl. 250-83.6ft.
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Kobayashi, Yugoro, to Kabushiki Kaisha Ricoh. Sheet conveyor for automatic copying machines. 3,687,548, Cl. 355-76.000.
Kobe, Inc.: *See—*
McArthur, Ralph F.; and Geurts, Melle F., 3,687,573.
Kober, Alois, Ag Maschinenfabrik: *See—*
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Kober, Kurt, to Kober, Alois, Ag Maschinenfabrik. Wheel axle for single-axle vehicle. 3,687,479, Cl. 280-124.00r.
Kobetz, Paul; and Becker, Warren E., to Ethyl Corporation. Method of manufacturing alkylaluminum compounds. 3,687,994, Cl. 260-448.00a.
Kobori, Toshio: *See—*
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Koch, Heinz; and Vohringer, Eugen Martin, to Werner & Pfleiderer, Firma. Continuously operating screw machine for the treatment of plastic masses. 3,687,423, Cl. 259-109.000.
Koch, Robert M.; Webb, Samuel L.; and Toby, Dennis E., to Addressograph-Multigraph Corporation. Liquid developing apparatus. 3,687,049, Cl. 95-89.00r.
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Kochis, John L.: *See—*
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Kockott, Dieter, to Original Hanau Quarzlamken G.m.b.H. Ultraviolet testing apparatus with selective mirrors for removing infrared radiation. 3,686,940, Cl. 73-150.000.
Koda, Arthur J.; and Riedel, Charles E., to Clare, C. P., & Company. Piezoelectrically actuated lever switch. 3,688,135, Cl. 310-8.500.
Kodaira, Kazuo: *See—*
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Kodekey Electronics Inc.: *See—*
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Koerner, Gotz; and Rossmy, Gerd. Process for preparing chloropolysiloxanes. 3,687,642, Cl. 423-342.000.
Koga, Kazuo: *See—*
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Koll, Roman: *See—*
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Kolorz, Bruno, to Outboard Marine Corporation. Automatic engine decompression system for two-cycle engine. 3,687,124, Cl. 123-182.000.
Komiya, Takao; Tosaka, Umi; Ihara, Takashi; Matsuo, Takehiko; and Ohara, Katsunobu, to Canon Kabushiki Kaisha. Electrophotographic plate and the method for producing the same. 3,687,659, Cl. 96-1.500.
Kommanditgesellschaft Dr.-Ing. Rudolf Hell: *See—*
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Komori, Masahiro: *See—*
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Komori, Masahiro; and Komori, Takehiko, said Komori, Takehiko assor. to said Komori, Masahiro. Safety gate for presses. 3,687,060, Cl. 100-53.000.
Komori, Takehiko: *See—*
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Kondo, Tokiharu: *See—*
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Kondolff, Joseph Charles Richard. Calcinable ring in thermoplastic material for taking imprints when making permanently fixed false teeth. 3,686,754, Cl. 32-17.000.
Koneshiroku Photo Industry Co., Ltd.: *See—*
Suzuki, Ruizo; Sato, Sumihisa; Okamoto, Shuji; Shinozaki, Akira; and Doi, Tatsumi, 3,687,542.
Koori, Shigeyoshi; Inomata, Hiroshi; and Imai, Kiyoshi. Silicone rubber bonded to synthetic rubber utilizing organotrihalogenosilane as a primer. 3,686,731, Cl. 29-132.000.
Korbel, F., and Brothers, Inc.: *See—*
Randrup, Benjamin F., 3,687,263.
Korf, Christiaan, to Woods Research and Development Corporation. Water extended polyester resin. 3,687,883, Cl. 260-29.6nr.
Kosmowski, Wojciech B., to Digital Systems, Inc. Collet. 3,687,467, Cl. 279-1.00b.
Kosrow, Robert L.; and Attwood, John G., to Union Special Machine Company. Automatic control for sewing machines. 3,687,097, Cl. 112-210.000.
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Kozu, Isao; and Nakashima, Yasutaka, to Matsushita Electric Industrial Co., Ltd. Talking clock apparatus. 3,686,851, Cl. 58-14.000.
Krafft, Frederic B., to Wire Technology and Machinery Co., Inc. Wire drawing apparatus and method. 3,686,908, Cl. 72-43.000.
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Kramer, Willi; and Muskulus, Willi. Apparatus for removal of a certain number of plates from a stack of plates. 3,687,303, Cl. 214-8.50s.
Krause, Horst: *See—*
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Krause, Ronald O.; and Ayala, Kenneth J., to Nutrico, Inc. Signal converter and amplifier for metering additive flow. 3,687,151, Cl. 137-101.210.
Krchnavi, John; and Leech, William D., to Bio-Med Research Corporation. Animal feed containing mortmorillonite clay. 3,687,680, Cl. 99-4.000.
Kremnev, Oleg Alexandrovich: *See—*
Dyskin, Ernest Matveevich; Raevsky, Georgy Vladimirovich; Biletsky, Semen Mikhailovich; Burmenko, Eduard Jurievich; Grosman, Erikh Ruvimovich; Satanovsky, Abram Lazarevich; Kremnev, Oleg Alexandrovich; Zhuravlenko, Viktor Yakovlevich; and Protsyshin, BorisNikolaevich, 3,687,434.
Kreuder, Manfred; Metzner, Wolfgang; Sobel, Johannes; Himmelmann, Wolfgang; and Nittel, Fritz, to Agfa-Gevaert Aktiengesellschaft. Photographic layers containing compounds which absorb ultraviolet light. 3,687,671, Cl. 96-84.00r.
Krieger, Robert G., Sr., to Bobbitt Laboratories. Visual display unit. 3,688,008, Cl. 35-17.000.
Krimm, Heinrich: *See—*
Vernaleken, Hugo; Malamet, Georg; Bottenbruch, Ludwig; Krimm, Heinrich; and Schnell, Hermann, 3,687,895.
Krock, Richard H.; and Richmond, William J., to Mallory, P. R., & Co., Inc. Method of making beryllium-aluminum-copper-silicon wrought material. 3,687,737, Cl. 148-2.000.
Krone GmbH: *See—*
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Kropscott, Earle L.; Blanchard, Robert R.; and Schramm, James N., to Dow Chemical Company, The. Method for reclamation of multicomponent mixtures of waste thermoplastic materials. 3,687,873, Cl. 260-2.300.
Kruiger, Kornelis, to N.V. Offringa. Method and apparatus for determining the relative proportions by weight of asphalt components. 3,686,959, Cl. 73-432.00r.
Kruka, Vitold R.; and Meier, Dale J., to Shell Oil Company. Process of reducing friction loss in flowing hydrocarbon liquids and compositions thereof. 3,687,148, Cl. 137-13.000.
Krull, Maynard J., to Davis and Furber Machine Company. Clutch and brake construction for spinning and twisting frames. 3,687,252, Cl. 192-18.00b.
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Kubota, Yasuharu, to Sony Corporation. Color television camera indexing apparatus. 3,688,020, Cl. 178-5.4st.

Kuhlmann, Joachim: *See—*
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Kuhn, Konrad; and Boedecker, Manfred, to Kali-Chemie Aktiengesellschaft. Shaped body for filtering and drying of liquids and gases and process of making the same. 3,687,297, Cl. 210-502.000.

Kulig, Constantine W.: *See—*
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Kuramoto, Yoshio; Okamoto, Akio; and Kobori, Toshio, to Minolta Camera Kabushiki Kaisha. Hanger for cameras and the like. 3,686,711, Cl. 16-125.000.

Kurihara, Sumio; Araki, Kazumi; Akeyama, Katsumi; and Takasawa, Yoshimasa, to Kyowa Hakko Kogyo Kabushiki Kaisha. Process for producing L-lysine by fermentation. 3,687,810, Cl. 195-29.000.

Kurokawa, Hiromichi; and Kubota, Yasuharu, to Sony Corporation. Color television camera. 3,688,023, Cl. 178-5.4st.

Kurtz, Peter; and Schwarz, Herbert, to Farbenfabriken Bayer Aktiengesellschaft. Process for the continuous production of 1,4-dicyano-2-butene. 3,688,003, Cl. 260-465.80r.

Kusters, John A., to Hewlett-Packard Company. Electronically tunable acousto-optic filter having improved light and acoustic wave interaction. 3,687,521, Cl. 350-149.000.

Kusumoto, Hazime: *See—*
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Kuwada, Yutaka: *See—*
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Kyowa Hakko Kogyo Co., Ltd.: *See—*
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La Barge, Robert L., to Aluminum Company of America. Windows and similar panel supporting structures. 3,686,795, Cl. 49-345.000.

La Belle, Harold E., Jr.; and Cronan, Charles J., to Tyco Laboratories, Inc. Apparatus for growing crystalline bodies from the melt. 3,687,633, Cl. 23-273.0sp.

La Camera, Alfred F.; and Semer, Joseph R., to Youngstown Sheet and Tube Company. Controlled-width fluid doctor. 3,687,103, Cl. 118-63.000.

La Fortune, Normand J.: *See—*
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La Telephonic Industrielle et Commerciale "Telic": *See—*
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Labarte, Maurice; and Lenfant, Jacques. Method of manufacturing jewels of gold or platinum or their alloys. 3,686,734, Cl. 29-160.600.

Ladd Research Industries, Inc.: *See—*
Porter, John H.; and Murray, David B., 3,686,958.

Laessig, Rudolf Reinhold, to General Electric Company. Thermostatic flow controller. 3,687,365, Cl. 236-99.000.

Lafortunf, Normand: *See—*
Macone, Frederick W.; and Lafortunf, Normand, 3,687,273.

Lahaye, Raymond, to Societe d'Instrumentation Schlumberger. Turbine-type volumetric flowmeters. 3,686,948, Cl. 73-230.000.

Lake, Connie, to Mobil Oil Corporation. Foldable support for limp plastic bags. 3,687,408, Cl. 248-97.000.

Lamb, George Edwin Robert: *See—*
Li, Hsin Lang; Lamb, George Edwin Robert; and Prevorsek, Dusan Ciril, 3,686,722.

Lamb, James J., to United States of America, Army. Real-time initial atmospheric gradient measuring system. 3,688,189, Cl. 324-58.50b.

Lambach, Rolf: *See—*
Scheweinfurth, Hans; and Lambach, Rolf, 3,687,420.

Lambert, Lucian T. Combination of a rapidly removable lawn edger and a rotary lawnmower. 3,686,839, Cl. 56-11.600.

Lambert, Ronald D.: *See—*
Fall, Maxwell S.; and Lambert, Ronald D., 3,687,505.

Lampkin, Curt M., to Baldwin, D. H., Company. Analog to digital encoder. 3,688,302, Cl. 340-347.00p.

Lang, William J., to International Minerals & Chemical Corporation. High yield bentonites. 3,687,846, Cl. 252-8.50a.

Lange, Clarence E.: *See—*
Beaverton, Daniel H.; Hall, Richard H.; and Lange, Clarence E., 3,686,827.

Langlois, Gary N., to Holotron Corporation. Ultrasonic beam expander. 3,687,219, Cl. 181-.50r.

Lanigan, Richard W., to American Hospital Supply Corporation. Hospital beds. 3,686,696, Cl. 5-63.000.

Larkins, James J.: *See—*
Self, Aaron C.; and Larkins, James J., 3,688,052.

Larsen, Eric R.: *See—*
Exner, Jurgen H.; Larsen, Eric R.; and Gunsher, Jeffrey A., 3,688,001.

Larsh, Everett P. Marine vessel roll stabilizer apparatus. 3,687,100, Cl. 114-126.000.

Larsson, John Lars Arvid, to Aktiebolaget Karlstads Mekaniska Werkstad. Method for washing chips. 3,687,733, Cl. 134-25.00r.

Latashi, Jury Vadimovich: *See—*
Zuev, Ivan Mikhailovich; Gorsky, Anatoly Vasilievich; Medovar, Boris Izrailevich; Anenko, July Georgievich Emely; Latashi, Jury Vadimovich; and Bogachenko, Alexei Georgievich, 3,687,189.

Lauersdorf, Duane H.: *See—*
McKenna, John Patrick; Keeling, Richard J.; and Lauersdorf, Duane H., 3,688,007.

Laursen, Ejnar Munk. Thermocopying machine. 3,687,551, Cl. 355-110.000.

Lavergne, Joseph M., Jr. Hollow article casting apparatus. 3,687,597, Cl. 425-438.000.

Lawler, William P.: *See—*
Cichoski, Sylvester A.; Damon, Paul H.; Golembeski, Ronald J.; and Lawler, William P., 3,687,778.

Lawrence, Frederick R.; and Sullivan, Robert H., to Du Pont de Nemours, E. I., and Company. Process for making a dioxane. 3,687,981, Cl. 260-340.700.

Lawrence, George; and Mueller, Hans J., to International Business Machines Corporation. Flexible disk magnetic recording device. 3,688,285, Cl. 340-174.010.

Layton, Howard M., to Interlab, Inc. Fluid flow rate sensor. 3,687,158, Cl. 137-551.000.

Le Duc, Jean-Marc, to U.S. Philips Corporation. Method of manufacturing a semiconductor device consisting of a ternary compound of ZnSiAs on a GaAs substrate. 3,687,743, Cl. 148-171.000.

Lear Siegler, Inc.: *See—*
Buscher, Richard G., 3,688,099.

Leatherman, Eugene A.: *See—*
McVickers, Jack C.; and Leatherman, Eugene A., 3,686,757.

Leczkowski, Kurt. Method for automatic exposure control for photographs with flash-and mixed light and camera arrangement for such method. 3,687,029, Cl. 95-10.0ct.

Ledergerber, Alfred; Jacoby, Hans; and Fenghler, Gerd, to Werkszeugmaschinenfabriek Gildemeister & Comp. Aktiengesellschaft. Multiple spindle machine tool with hydrodynamic bearings for work spindles. 3,686,986, Cl. 82-30.000.

Lee, Joseph L. Erasure prevention control for magnetic tape reels having a safety ring to prevent insertion of a file protect ring. 3,688,057, Cl. 179-100.20d.

Lee, Raymond, Organization, Inc., The: *See—*
Carmody, Dewey Blaine, 3,687,136.

Leech, William D.: *See—*
Krchnavi, John; and Leech, William D., 3,687,680.

Leeman, Jan N. J.; and Dreissen, Hubert H., to Stamicarbon N.V. Reconditioning of suspensions used in the separation of minerals. 3,687,284, Cl. 209-39.000.

Leemetals Limited: *See—*
Stanway, Edward, 3,686,905.

Leep, Vladimir Romanovich; Sibgatulin, Kharis Malikovich; and Cherkasov, Jury Nikolaevich. Saturable reactor. 3,688,181, Cl. 323-43.50s.

Leibinzohn, Saul. Catheter. 3,687,142, Cl. 128-348.000.

Leininger, Dale E.: *See—*
Whysong, Dale C.; and Leininger, Dale E., 3,688,300.

Leland Stanford Junior University, The Board of Trustees of the: *See—*
Merigan, Thomas C., Jr.; Eckstein, Fritz; and De Clercq, Eric Desire Alice, 3,687,808.

L'Electronique Appliquee: *See—*
Tetar, Claude R., 3,688,085.

LeMay, William E.; and Glennon, Richard F., to Baxter Laboratories, Inc. Dusting method and apparatus. 3,687,702, Cl. 117-61.000.

Lemkin, Jack L.: *See—*
Handler, Elliot; Ryan, John W.; Lemkin, Jack L.; and Dunn, Ralph, 3,686,894.

Lemmey, Edgar S.: *See—*
Dine, Lester A.; and Lemmey, Edgar S., 3,687,030.

Lenfant, Jacques: *See—*
Labarte, Maurice; and Lenfant, Jacques, 3,686,734.

Leningradsky Elektrotekhnichesky Institut svyazi imeni Professora M.A.: *See—*
Odnolko, Valentin Vladimirovich; and Uzilevsky, Vladimir Aronovich, 3,688,026.

Lennon, John: *See—*
Schneider, John M.; and Lennon, John, 3,688,107.

Lenz, Siegfried, to Daimler-Benz Aktiengesellschaft. Control installation for combustion engines. 3,687,120, Cl. 123-117.00a.

Leonhard, Karl Wilhelm: *See—*
Hartmann, Hans Joerg; Leonhard, Karl Wilhelm; Ohlinger, Manfred; and Schwarzmann, Matthias, 3,687,851.

Leopold, Wilbur R.; Hackman, Frank C.; Floren, Carl E.; and Gould, Wallace E., to Mueller Co. Service pipe coupling joint. 3,687,492, Cl. 285-247.000.

Leslie, Prystup J.; and Mc Nair, William E., to Consolidated Packaging Corporation. Six corner collapsible carton. 3,687,353, Cl. 229-33.000.

Lesser, Herbert F.; Schmeisser, Manfred H.; and Kamp, Artur F., to VEB Vhrinkombinat Rubhla. Chronograph mechanism. 3,686,881, Cl. 58-76.000.

Levasseur, Joseph L., to Simcom Corporation. Check digit and transaction authorization system. 3,688,086, Cl. 235-61.70b.

Levin, Ezra, to VioBin Corporation. Process and apparatus for producing fat and nutritious defatted solids from fatty biological material containing water. 3,687,819, Cl. 203-47.000.

Levine, Barry F.: *See—*
Freund, Isaac; and Levine, Barry F., 3,688,124.

Levy, Leon M., to Condecor, Inc. Frame and easel back assembly. 3,686,783, Cl. 40-152.100.

Lewis, Albert F.: *See—*
Zenger, Richard D.; and Lewis, Albert F., 3,686,820.

Lewis, Ernest E., to Gainesville Machine Company, Inc. Shackle suspension means. 3,686,712, Cl. 17-44.100.

Lewis, Ernest E., to Gainesville Machine Company, Inc. Method and apparatus for killing fowl. 3,686,713, Cl. 17-52.000.

Lewis, Ivor James; and Stone, John T., to Westinghouse Electric Corporation. Servo-actuator mechanism. 3,687,017, Cl. 92-165.000.

Lewis, Jesse M.: *See—*
Stanley, Richard C.; and Lewis, Jesse M., 3,687,704.

Lewis, Roger N.; and Friedman, Ronald L., to Argus Chemical Corporation. Novel co-initiator systems. 3,687,867, Cl. 252-426.000.

Ley, Kurt: *See—*
Nast, Roland; Dahm, Manfred; Ley, Kurt; and Schubart, Rudiger, 3,687,875.
Nast, Roland; Dahm, Manfred; and Ley, Kurt, 3,687,876.

Li, Hsin Lang; Lamb, George Edwin Robert; and Prevorsek, Dusan Ciril, to Allied Chemical Corporation. Triplanar blade edge for yarn texturizing. 3,686,722, Cl. 28-1.300.

Libby, Clarence R., to Nash Engineering Company. Centrifuge type separator. 3,686,831, Cl. 55-199.000.

Licencia Talalmanyokat Ertekesito Vallalat: *See—*
Szabo, Gyorgy; and Toth, Sandor, 3,687,775.

Licentia Patent-Verwaltungs G.m.b.H.: *See—*
Hilberg, Wolfgang, 3,688,279.

Licentia Patent-Verwaltungs-G.m.b.H.: *See—*
Lieb, Albert; and Niehuus, Hans-Christian, 3,688,143.

Liddell, Harold G., to Dow Chemical Company, The. Corrosion inhibition. 3,687,611, Cl. 21-2.700.

Lieb, Albert; and Niehuus, Hans-Christian, to Licentia Patent-Verwaltungs-G.m.b.H. Multi-diode camera tube with fiber-optics faceplate and channel multiplier. 3,688,143, Cl. 313-67.000.

Lieberman, Stuart I., to United States of America, Army. Matched ultrasonic delay line with solderable transducer. 3,688,222, Cl. 333-30.000.

Liechti, Hans Wilhelm: *See—*
Ramanathan, Visvanathan; and Liechti, Hans Wilhelm, 3,687,929.

Liechti, Peter: *See—*
Siegrist, Adolf Emil; Maeder, Erwin; Liechti, Peter; and Guglielmetti, Leonardo, 3,687,880.

Liepa, Alexander L., to Procter & Gamble Company, The. Production of ready-to-eat breakfast cereals containing soy flour. 3,687,687, Cl. 99-83.000.

Liljendahl, Sven Algot Joel, to Aktiebolaget Electrolux. Method of conducting waste liquid by vacuum through long conduits of pneumatic sewage disposal systems. 3,686,693, Cl. 4-10.000.

Lilly, Eli, and Company: *See—*
Debono, Manuel, 3,687,947.

Lindal, Skuli Walter. Reinforced wood floor sections. 3,686,809, Cl. 52-223.000.

Lindblom, Karl Thore, to Ostbergs Fabriks AB. Feeding means for longitudinal objects in their longitudinal direction. 3,687,271, Cl. 198-167.000.

Linde Aktiengesellschaft: *See—*
Forster, Franz, 3,687,212.

Lindemann, Eckhard: *See—*
Hell, Rudolf; Wellendorf, Klaus; Koll, Roman; and Lindemann, Eckhard, 3,688,033.

Lindholm, Edward J. Universal connector. 3,687,487, Cl. 285-55.000.

Linen Supply Association of America, The: *See—*
Rosenfeld, Howard; and Wetzler, Justin J., 3,686,899.

Lininger, William W. Wave powered generator. 3,687,567, Cl. 415-7.000.

Link Industries, Inc.: *See—*
Watson, Walter E., 3,687,497.

Linread Limited: *See—*
Powsey, Eric, 3,686,914.

Linsley, Douglas F.: *See—*
Linsley, Douglas F., 3,687,101.

Linsley, Douglas F., to Linsley, Douglas F. and Linsley, Helen E. Marine rudder. 3,687,101, Cl. 115-18.00b.

Linsley, Helen E.: *See—*
Linsley, Douglas F., 3,687,101.

Linton, Robert W.: *See—*
Sams, Robert H.; Linton, Robert W.; and Weldes, Helmut H., 3,687,640.

Lion Fat & Oil Co., Ltd.: *See—*
Susuki, Rinnosuke; Hoshi, Hiroshi; Saito, Jiro; Murakami, Keiichi; and Hirakawa, Michio, 3,687,890.

Liquori, Stephen A. Modular audio-visual control system. 3,688,262, Cl. 340-147.00r.

List, Hans: *See—*
Scheiterlein, Andreas, 3,687,231.

List, Heinz. Multiple spindle mixing device. 3,687,422, Cl. 259-104.000.

Littan, Eugene G. Reciprocating beater means for agricultural rod crop harvester. 3,686,842, Cl. 56-330.000.

Little, Arthur D., Inc.: *See—*
Drake, Elisabeth M.; and Gifford, William E., 3,686,828.

Little, William S., Jr., to Xerox Corporation. Mechanical drive arrangement. 3,686,974, Cl. 74-665.0ga.

Litton Business Systems, Inc.: *See—*
Henderson, John Franklin, 3,688,261.

Loboda, Jon A.: *See—*
Muzyczko, Thaddeus M.; Shore, Samuel; and Loboda, Jon A., 3,687,870.

Lock, Everett H.; and Maurer, William C., to Esso Production Research Company. Threaded connection. 3,687,493, Cl. 285-333.000.

Lockheed Aircraft Corporation: *See—*
Boberg, John E., 3,687,054.

Lockshaw, John E. Solderless lug connector. 3,688,245, Cl. 339-95.00d.

Lodding Engineering Corporation: *See—*
Murphy, William M.; and Beauchemin, Norman J., 3,687,730.

Lodge, John Ewart. Synthetic polymers from sulfo-bis (aminoalkyl) fluorene. 3,687,903, Cl. 260-78.00r.

Lodge-Cottrell Limited: *See—*
Busby, Howard G. T., 3,686,825.

Loew, Theodore, to Standard Products Co. The. Bump-protection molding. 3,687,502, Cl. 293-1.000.

Long Island Mold and Tool Corporation: *See—*
Vath, William, 3,687,246.

Longshaw, William J.; Sieson, Roy C., Jr.; and Ridenour, James, to Pacific Western Extruded Products, Inc. Beaded plastic tubing joint and fabrication. 3,687,167, Cl. 138-109.000.

Looker, Olin L., to FMC Corporation. Trash blower. 3,687,568, Cl. 415-99.000.

Loomis, Charles M. Door frame, sill and facia construction for elevator. 3,686,808, Cl. 52-211.000.

Loos, Horst Rudolf, to Vibro Meter A.G. Eddy current position transducer utilizing a cord whose impedance is more substantially ohmic. 3,688,187, Cl. 324-40.000.

Loral Corporation: *See—*
Gustafson, Walter R.; McMillen, William H.; Kemper, Jackson, Jr.; and Newman, Leonard (said Newman assor. to), 3,688,312.

Lorraine Industries, Inc.: *See—*
Sherwood, Henry A., 3,687,462.

Loughran, Anthony. Baling press bale releasing means. 3,687,068, Cl. 100-255.000.

Lovdahl, Robert A.: *See—*
Thomas, Vitas T.; and Lovdahl, Robert A., 3,687,016.

Lovell, Keith Victor: *See—*
Fydelor, Peter John; and Lovell, Keith Victor, 3,687,832.

Lovett, John R.: *See—*
Tyler, William E., III; and Lovett, John R., 3,687,954.

Lowe & Fletcher Limited: *See—*
Watkins, John; and James, Reginald, 3,686,906.

Lubrizol Corporation, The: *See—*
Abbott, Franklin Paul, 3,687,849.
Dorer, Casper J., 3,687,905.
Miller, Clark Ober, 3,687,645.

Lucas, Joseph, (Industries) Limited: *See—*
Finley, Gilbert Ralph, 3,686,706.

Ludt, William C.; and Watson, Edward P., to Ethyl Corporation. Continuous V/L measuring. 3,686,924, Cl. 73-53.000.

Lugscheider, Walter; and Maier, Richard, to Siemens Aktiengesellschaft. Method of producing superconductive cavity resonators, particularly for particle separators. 3,687,823, Cl. 204-3.000.

Lummus Company, The: *See—*
Sze, Morgan C.; Unger, Harold; and Bennett, Thomas M., 3,687,840.

Lundin, Stig, to Svenska Rotor Maskiner Aktiebolag. Mufflers. 3,687,224, Cl. 181-33.00a.

Lussling, Theodor: *See—*
Geiger, Friedhelm; Lussling, Theodor; Theissen, Ferdinand; and Weigert, Wolfgang, 3,687,621.

Lyman, John B., to Whirlpool Corporation. Method and apparatus for forming a clear ice product. 3,686,890, Cl. 62-67.000.

Lynch, Geraldine B.; and Carlough, Warren A., to Ilex Optical Co., Inc. Variable magnification lens system for finite conjugate distances. 3,687,522, Cl. 350-184.000.

Lynch, John F.; Moser, Murtha E.; and Nichols, Raymond A., to Marco Development Co., Inc. Separator and method. 3,687,288, Cl. 210-84.000.

Maclean, Peter M.; Shaw, Leslie E.; and Jarvis, Harold, to Shaw Pipe Industries Ltd. Method for thermally insulating pipe. 3,687,765, Cl. 156-187.000.

Macone, Frederick W.; and La Fortune, Normand J., to Avant Incorporated. Exposure control system which eliminates double exposures in a multiple image camera. 3,687,040, Cl. 95-36.00r.

Macone, Frederick W.; and Lafortunf, Normand, to Avant Corporation. Transport belt alignment system. 3,687,273, Cl. 198-202.000.

Macrander, Karl; and Kessel, Heinrich, to Fried Krupp Gesellschaft mit beschrankter Haftung. Device for emptying floating containers. 3,687,307, Cl. 214-12.000.

Macrander, Karl, to Fried Krupp Gesellschaft mit beschrankter Haftung. Device for transloating floating containers. 3,687,309, Cl. 214-15.00r.

Maddox, Jim, Jr.; and Schoen, William, to Texaco Inc. Composition and process for inhibiting corrosion in oil wells. 3,687,847, Cl. 252-8.55e.

Madsen, Ingvard Mosby: *See—*
Petersen, Jorgen Hartvig; and Madsen, Ingvard Mosby, 3,687,154.

Madsen, Willy Buch: *See—*
Rasmussen, Ole-Bendt; Madsen, Willy Buch; and Nielsen, Arne E., 3,686,853.

Maeda, Kiyoshi: *See—*
Shiraishi, Masao; and Maeda, Kiyoshi, 3,687,911.

Maeder, Erwin: *See—*

Siegrist, Adolf Emil; Maeder, Erwin; Liechti, Peter; and Guglielmetti, Leonardo, 3,687,880.
Maelzer, Carl-August; and Reh, Lothar, to Metallgesellschaft Aktiengesellschaft. . 3,687,656, Cl. 75-74.000.
Maeshiba, Sozaburo. Device for measuring the quantity of liquid passing through a pipe. 3,686,947, Cl. 73-229.000.
Mager, Donald V.; and Mager, Frederick R. Rotary thatcher. 3,686,841, Cl. 56-17.500.
Mager, Frederick R.: *See—*
Mager, Donald V.; and Mager, Frederick R., 3,686,841.
Magerlein, Helmut: *See—*
Rupp, Hans-Dieter; Meyer, Gerhard; and Magerlein, Helmut, 3,687,617.
Magers, Leroy; Riddle, John H.; and Eitzen, August D., to Gulf General Atomic Incorporated. Prestressing apparatus. 3,687,380, Cl. 242-7.210.
Magnavox Company, The: *See—*
Marshall, Daniel J., 3,688,022.
Maier, Karl, to Badische Anilin- & Soda-Fabrik Aktiengesellschaft. Red anthraquinone dyes containing ester groups. 3,687,985, Cl. 260-376.000.
Maier, Richard: *See—*
Lugscheider, Walter; and Maier, Richard, 3,687,823.
Maitenaz, Bernard F., to Societe des Lunetiers. Ophthalmic lenses with a progressively varying focal power. 3,687,528, Cl. 351-169.000.
Malamet, Georg: *See—*
Vernaleken, Hugo; Malamet, Georg; Bottenbruch, Ludwig; Krimm, Heinrich; and Schnell, Hermann, 3,687,895.
Malkin, Irving: *See—*
Kennedy, Alexander W.; and Malkin, Irving, 3,687,739.
Malkin, Irving, to Diamond Shamrock Corporation. Coated metal and method. 3,687,738, Cl. 148-6.200.
Mallory, P. R., & Co., Inc.: *See—*
Klein, Gerhart P.; and Wingood, Ivan L., Jr., 3,688,161.
Krock, Richard H.; and Richmond, William J., 3,687,737.
Malone, Joseph G.; and Smith, H. Morton, to Industrial Insulations, Inc. Heat insulating assembly. 3,687,170, Cl. 138-143.000.
Malone, William T., to Holliburton Company. Method of increasing well productivity. 3,687,203, Cl. 166-308.000.
Mandel, Jorn: *See—*
Schulz, Hans-Peter; and Mandel, Jorn, 3,687,430.
Manero, Anthony Frank. Intermediate clutch alignment tool. 3,686,739, Cl. 29-274.000.
Mann, Thomas A. Automobile anti-theft device. 3,688,257, Cl. 340-64.000.
Manning, James P., to Republic Melding Corporation. Molded furniture. 3,687,092, Cl. 108-156.000.
Manual, James E., to Versatech Corporation. Buoyant barrier and method for installing the same. 3,686,869, Cl. 61-1.00f.
Mapes, James E., to United States of America, Army. Semi-micro absolute transmittance and specular reflectance accessory for spectrophotometers. 3,687,519, Cl. 356-96.000.
Marasco, Anthony D.: *See—*
Savoca, Paul C.; and Marasco, Anthony D., 3,688,244.
Marathon Oil Company: *See—*
Gogarty, William B.; and Bush, William P., 3,687,609.
Marbelite Company, Inc., The: *See—*
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Marbet, Roman: *See—*
Gutmann, Hugo; Marbet, Roman; and Schwieter, Ulrich, 3,687,990.
Marco Development Co., Inc.: *See—*
Lynch, John F.; Moser, Murtha E.; and Nichols, Raymond A., 3,687,288.
Marcus, Friedrich-Karl: *See—*
Rosenmund, Peter; and Grubel, Klaus, 3,687,962.
Marcus, Robert Boris: *See—*
Chang, Chuas Chung; Marcus, Robert Boris; and Wagner, Richard Siegfried, 3,687,745.
Marechal, Claude M.: *See—*
Audran, Roger G. L.; Dostes, Clude G.; and Marechal, Claude M., 3,687,677.
Margolien, David H., to Geometron Company, Inc. Cutting elongated stock. 3,686,990, Cl. 83-409.000.
Marjon, Pierre L.: *See—*
Hughes, Robert R.; and Marjon, Pierre L., 3,686,707.
Marke, Berno-Dieter: *See—*
Gull, Karl-Heinz; and Marke, Berno-Dieter, 3,687,483.
Markovitz, Mark, to General Electric Company. Borosilicone materials and epoxy resins cured therewith. 3,687,872, Cl. 260-2.0ec.
Marley Wollongong Limited: *See—*
Ransom, Arthur Charles, 3,687,306.
Marraro, Robert V., to United States of America, Air Force. Bacterial growth media. 3,687,816, Cl. 195-100.000.
Marshall, Connie T.: *See—*
Fort, Larry W.; and Marshall, Connie T., 3,688,210.
Marshall, Daniel J., to Magnavox Company, The. Crosstalk reduction in color reproduction system. 3,688,022, Cl. 178-5.4st.
Marshall, Don J., to Goodall Semi-Metallic Hose & Mfg., Co. Hose coupling. 3,687,491, Cl. 285-242.000.
Marshall, Peter W.; Arnold, Peter; and Dunn, Francis P. Curved offshore well conductors. 3,687,204, Cl. 175-9.000.
Marsheck, William J.: *See—*
Colton, Frank B.; Marsheck, William J.; and Miyano, Masateru, 3,687,811.
Martin, Elmore L., to Du Pont de Nemours, E. I., and Company. Substituted chalcogeno derivatives of tetracyanoquinodimethans. 3,687,987, Cl. 260-396.00n.
Martin, Kenneth C.; Baxter, Michael D.; and Holmes, John F., to Hobourn-Eaton Manufacturing Company Limited. Rotary pumps. 3,687,579, Cl. 418-26.000.
Martina, Eugene F., to United States of America, Air Force. Selective neutron sensor. 3,688,118, Cl. 250-83.100.
Martinez, Eugene, to Kamor Products, Inc. Glass-less mirror. 3,687,524, Cl. 350-288.000.
Maruta, Masayasu: *See—*
Akamatsu, Kiyoshi; Maruta, Masayasu; and Yonekura, Yasushi, 3,687,785.
Marwede, Gunter: *See—*
Witte, Josef; Haas, Friedrich; and Marwede, Gunter, 3,687,889.
Marzan, Fred J. Brass wind instrument. 3,686,995, Cl. 84-389.000.
Marziano, Bennedetto A.: *See—*
Gadomski, Walter A.; and Marziano, Bennedetto A., 3,687,078.
Masaki, Mitsuo; Fukui, Kiyoshi; Ueda, Masahiro; and Okimoto, Kiyomi, to UBE Industries, Ltd. Process for the preparation of lactam-Lewis acid complex. 3,687,938, Cl. 260-239.30r.
Maschinenfabrik Augsburg-Nurnberg Aktiengesellschaft Zweignieder-lassung Nurnberg: *See—*
Bauer, Josef, 3,687,575.
Mascia, Carment T.: *See—*
Stanley, Thomas R.; and Mascia, Carment T., 3,687,341.
Masengil, Verdie A. Instrument for testing operability of fluorescent lamps. 3,688,185, Cl. 324-22.000.
Maslennikov, Konstantin Nikolaevich; Argunov, Jury Vasilievich; Savonkin, Nikolai Porfirievich; Smyvin, Rudolf Mikhailovich; and Chzhen, Igor Alexeevich. Squirrel-cage rotors for induction motors. 3,688,141, Cl. 310-211.000.
Mason, James N.; and Davidson, Charlotte C., to Sports Management Services, Inc. Golf practice device and game. 3,687,457, Cl. 273-176.0fa.
Masuda, Toru: *See—*
Meguro, Kanji; Kuwada, Yutaka; and Masuda, Toru, 3,687,941.
Masuyama, Takeshi; Matsuoka, Michio; and Nishi, Tsuyoshi, to Matsushita Electric Industrial Co., Ltd. Nonlinear resistor and nonlinear resistor composition. 3,687,871, Cl. 252-518.000.
Materials Technology Corporation: *See—*
McClure, James H.; and McCrary, James W., 3,686,732.
Matsuda, Hideaki; and Okamoto, Takanori, to Okura Kogyo Kabushiki Kaisha. Polymerizable mixtures comprising a halogenated bivalent metal salt of an acrylate-or methacrylate-phthalate ester of an alkylene glycol. 3,687,860, Cl. 252-188.300.
Matsuda, Tamio. Sanitary garment. 3,687,141, Cl. 128-288.000.
Matsui, Isamu; Nagasawa, Isao; Horiuchi, Tatsuo; Uchida, Hiroshi; and Uehara, Masao, to Daiwa Kaisha Boseki Kabushiki and and Murata Kaisha Kikai Kabushiki. Automatic spool feeding method and apparatus for automatic winding machine. 3,687,382, Cl. 242-35.5r.
Matsui, Shonji; Hayakawa, Yosikazu; and Hirashima, Kenzo. Automotive safety device having inflatable confinement. 3,687,486, Cl. 280-150.0ab.
Matsukawa, Hiroharu: *See—*
Katayama, Shizuo; Matsukawa, Hiroharu; Yamato, Masaya; and Matsuyama, Junichi, 3,687,865.
Matsukawa, Koshiro: *See—*
Hoshino, Yutaka; Iwaki, Yoshikazu; Matsukawa, Koshiro; Nakada, Akira; Sato, Fumio; and Uno, Kazuo, 3,687,913.
Matsumoto, Seiji, to Xerox Corporation. Apparatus for exposing latent image margins in electrophotographic copying apparatus. 3,687,538, Cl. 355-3.000.
Matsumoto, Sieji: *See—*
Sato, Masamichi; and Matsumoto, Sieji, 3,687,661.
Matsuo, Takehiko: *See—*
Komiya, Takao; Tosaka, Umi; Ihara, Takashi; Matsuo, Takehiko; and Ohara, Katsunobu, 3,687,659.
Matsuoka, Michio: *See—*
Masuyama, Takeshi; Matsuoka, Michio; and Nishi, Tsuyoshi, 3,687,871.
Matsushita Electric Industrial Co., Ltd.: *See—*
Kozu, Isao; and Nakashima, Yasutaka, 3,686,851.
Masuyama, Takeshi; Matsuoka, Michio; and Nishi, Tsuyoshi, 3,687,871.
Nagasawa, Masahiro; and Watanabe, Hiroyuki, 3,688,160.
Matsushita Electric Industrial Co., Ltd., and: *See—*
Sakamoto, Toshikazu; and Adachi, Michio, 3,687,495.
Matsushita Electric Works, Ltd.: *See—*
Yoshino, Akira, 3,688,234.
Matsushita, Shigenori; Sato, Fumitaka; and Chujo, Hisao, to Tokyo Shibaura Electric Co., Ltd. Control device for display apparatus. 3,688,299, Cl. 340-324.00a.
Matsuyama, Junichi: *See—*
Katayama, Shizuo; Matsukawa, Hiroharu; Yamato, Masaya; and Matsuyama, Junichi, 3,687,865.
Mattel, Inc.: *See—*
Handler, Elliot; Ryan, John W.; Lemkin, Jack L.; and Dunn, Ralph, 3,686,894.
Mattes, William J.: *See—*
Stumpf, Robert J.; and Mattes, William J., 3,687,796.
Matthews, Ralph W.: *See—*
Erickson, Rodney R.; Matthews, Ralph W.; and Sprangel, Richard V., 3,687,160.

Matumoto, Sakuzo, to Olympus Optical Co., Ltd. Digital micrometer. 3,686,766, Cl. 33-166.000.

Maul Bros., Inc.: *See—*
Clark, Willard; and Campbell, Charles, 3,687,274.

Maurer, William C.: *See—*
Lock, Everett H.; and Maurer, William C., 3,687,493.

Maus, Eicke: *See—*
Pfister, Franz; Albrecht, Ernst; Durner, Josef; and Maus, Eicke, 3,687,005.

Mausner, Marvin L.: *See—*
Kapur, Brij L.; and Mausner, Marvin L., 3,687,999.

Maytag, John Hardy, to Coors Porcelain Company. Container necking mechanism and method. 3,687,098, Cl. 113-120.00r.

Mazuir, Rene: *See—*
Falcy, Bernard C.; and Mazuir, Rene, 3,686,855.

Mazuir, Rene A.; and Hoffmann, Daniel. Method of manufacturing a flexible tubular member by coiling a shaped metallic strip about a tube of synthetic plastic material. 3,686,744, Cl. 29-456.000.

Mc Casland, Leonard: *See—*
Young, Carter R.; and Mc Casland, Leonard, 3,687,202.

Mc Connell, John R. Drilling mechanism. 3,687,563, Cl. 408-39.000.

Mc Nair, William E.: *See—*
Leslie, Prystup J.; and Mc Nair, William E., 3,687,353.

Mc Neil, Raymond F., to Del Monte Corporation. Metal container with removable closure. 3,687,334, Cl. 220-60.000.

McArthur, Ralph F.; and Geurts, Melle F., to Kobe, Inc. Reverse circulation fluid operated pump system. 3,687,573, Cl. 417-358.000.

McClure, James H.; and McCrary, James W., to Materials Technology Corporation. Method of making a positive choke device. 3,686,732, Cl. 29-157.00c.

McCluskey, Jarvis G.: *See—*
Wiesner, Karel; and McCluskey, Jarvis G., 3,687,937.

McConnaughey, Paul W.: *See—*
Strange, John P.; Nebash, Stanley P.; McInnes, Alexander C.; and McConnaughey, Paul W., 3,686,835.

McCormick, James B., to Pelam Inc. Instrument to measure pulmonary function. 3,687,130, Cl. 128-2.080.

McCrary, James W.: *See—*
McClure, James H.; and McCrary, James W., 3,686,732.

McDonald, James A., to Motorola, Inc. Signal coding and decoding system. 3,688,193, Cl. 325-32.000.

McDougall, Ian Leich: *See—*
Woolcock, Alan; McDougall, Ian Leich; and Barber, Anthony Clifford, 3,686,750.

McDowell, Maurice J.: *See—*
Abriss, Murray S.; and McDowell, Maurice J., 3,687,885.

McInnes, Alexander C.: *See—*
Strange, John P.; Nebash, Stanley P.; McInnes, Alexander C.; and McConnaughey, Paul W., 3,686,835.

McKenna, John Patrick; Keeling, Richard J.; and Lauersdorf, Duane H., to Sola Basic Industries, Inc. Metal melting and holding furnace. 3,688,007, Cl. 13-20.000.

McLain, James E.: *See—*
Williams, Earl J.; and McLain, James E., 3,686,741.

McLaren, James C.: *See—*
Hopkins, John D.; McLaren, James C.; Johnson, Ronald A.; and Offer, Robert J., 3,686,837.

McLarty, Jack Lowrie, to Universal Oil Products Company. Method of making a void free filament wound article. 3,687,762, Cl. 156-175.000.

McLaughlin Research Corporation: *See—*
Proctor, Wayne R., Jr., 3,687,458.

McMillen, William H.: *See—*
Gustafson, Walter R.; McMillen, William H.; Kemper, Jackson, Jr.; and Newman, Leonard, 3,688,312.

McNabney, John C., to Trane Company, The. Air distribution system with flow limiting device. 3,687,364, Cl. 236-49.000.

McNeil Laboratories, Inc.: *See—*
Plostnieks, Janis, 3,687,958.

McNulty, Terence P. Recovery of copper. 3,687,432, Cl. 266-9.000.

McVickers, Jack C.; and Leatherman, Eugene A. Constant tension orthodonic appliance. 3,686,757, Cl. 32-14.00d.

McWhorter, Edward M. Internal combustion engine variable throw crankshaft. 3,686,972, Cl. 74-602.000.

Mead-Emballage: *See—*
Prot, Marcel, 3,687,281.

Mechtron International Corporation: *See—*
Pelletier, Robert A., 3,687,276.

Medendorp, Roger L., to Kirkhof Manufacturing Corporation. Apparatus for forming a plastic sheet. 3,687,594, Cl. 425-388.000.

Medovar, Boris Ezrailevich: *See—*
Paton, Boris Evgenievich; Medovar, Boris Ezrailevich; Chekotilo, Leonty Vasilievich; Pavlov, Leonid Viktorovich; Ariamonov, Viktor Leonidovich; Borisovich, Kiev, Alexandr; Kamensky, Leonid Alexeevich; Ishunkin, Veniamin Alexandrovich; Belenky, Alexandr Mikailovich; Shevisov, Anatoly Ivanovich; Grinsnpon, Semen Yakovlevich; Sysenko, Anatoly Pavovich; Dubinsky, Rudolf Solomonovich; Papav, Valery Georgievich; and Toschev, Alexandr Mikhaivich, 3,687,188.

Medovar, Boris Izrailevich: *See—*
Zuev, Ivan Mikhailovich; Gorsky, Anatoly Vasilievich; Medovar, Boris Izrailevich; Anenko, July Georgievich Emely; Latashi, Jury Vadimovich; and Bogachenko, Alexei Georgievich, 3,687,189.

Meguro, Kanji; Kuwada, Yutaka; and Masuda, Toru, to Takeda Chemical Industries Ltd. 2-Iminobenzodiazepine derivatives. 3,687,941, Cl. 260-239.0bd.

Meier, Dale J.: *See—*
Kruka, Vitold R.; and Meier, Dale J., 3,687,148.

Meijer, Leo. Apparatus for applying a finish to cement blocks or the like. 3,687,771, Cl. 156-232.000.

MeKanomatik AB: *See—*
Skalleberg, Oystein Gunnar, 3,687,385.

Melkcentrale Gouda N.V.: *See—*
Brouwer, Abraham; and Van Loom, Gerardus M. A. M., 3,687,928.

Menard, Aidor A. Drum stick. 3,688,013, Cl. 84-422.000.

Menell, Hans, to Continental Gummi-Werke Aktiengesellschaft. Method of making tires. 3,687,757, Cl. 156-126.000.

Menigat, Richard, to Metallgesellschaft Aktiengesellschaft. Incinerator apparatus. 3,687,094, Cl. 110-8.00r.

Meniolle D'Hauthuille, Jean. Pivoted gate. 3,686,793, Cl. 49-131.000.

Mercier, Jacques H. Locking ring for pressure vessel. 3,687,165, Cl. 138-30.000.

Merck & Co., Inc.: *See—*
Shen, Tsung-Ying; and Jones, Howard, 3,687,971.

Merigan, Thomas C., Jr.; Eckstein, Fritz; and De Clercq, Eric Desire Alice, to Leland Stanford Junior University, The Board of Trustees of the. Synthetic polynucleotides. 3,687,808, Cl. 195-28.00n.

Merser, Francis G., to Dennison Manufacturing Company. Article attachment and mounting device. 3,686,717, Cl. 24-73.0pf.

Mertwoy, Helen E.: *See—*
Gisser, Henry; and Mertwoy, Helen E., 3,687,922.

Mescheryakov, Jury Alexeevich: *See—*
Fedorenko, Anatoly Stepanovich; Mescheryakov, Jury Alexeevich; Prytkov, Alexandr Alexandrovich; and Tyabirdin, Vladimir Vasilievich, 3,688,148.

Messerschmitt-Bolkow GmbH: *See—*
Hofmann, Heinrich, 3,687,080.

Messerschmitt-Bolkow-Blohm Gesellschaft mit beschrankter Haftung: *See—*
Pfister, Franz; Albrecht, Ernst; Durner, Josef; and Maus, Eicke, 3,687,005.

Messervey, Clifford H., to Borden Company, The. Positive two channel can discharge. 3,687,285, Cl. 209-74.00r.

Messrs Toyota Jidosha Kogyo Kabushiki Kaisha: *See—*
Sato, Kazuo, 3,687,213.

Metaframe Corporation: *See—*
Willinger, Allan H., 3,687,291.

Metal Box Company Limited: *See—*
Franek, Jozef Tadeusz; and Rhodes, Peter, 3,687,099.

Metallgesellschaft AG: *See—*
Grob, Karl; Oertter, Josef; and Wiesner, Paul, 3,687,844.

Metallgesellschaft Aktiengesellschaft: *See—*
Maelzer, Carl-August; and Reh, Lothar, 3,687,656.
Menigat, Richard, 3,687,094.

Meteor Research Limited: *See—*
Tabor, Paul C., 3,687,488.

Metz, Louis C., to Sperry Rand Corporation. Synchro-to-digital converter. 3,688,303, Cl. 340-347.50y.

Metzner, Wolfgang: *See—*
Kreuder, Manfred; Metzner, Wolfgang; Sobel, Johannes; Himmelmann, Wolfgang; and Nittel, Fritz, 3,687,671.

Meyer, Gerhard: *See—*
Rupp, Hans-Dieter; Meyer, Gerhard; and Magerlein, Helmut, 3,687,617.

Meyer, Wilhelm, Firma: *See—*
Klug, Hans, 3,686,786.

Mezey, Frank G., to Victor Insetta. Tubular electronic reactor component having an embedded electrode. 3,688,226, Cl. 333-82.000.

Michael, Richard O.: *See—*
Woole, Cyril; and Michael, Richard O., 3,687,626.

Michalon, Daniel, to Centre Stephanois de Recherches Mecaniques Hydromecanique et Frottement. Apparatus for breaking-up solid porous and especially vegetable bodies. 3,687,180, Cl. 146-255.000.

Microdyne, Inc.: *See—*
Findlay, John S., 3,688,058.

Middleton, Ronald David, to Imperial Chemical Industries Limited. Polyamides. 3,687,904, Cl. 260-78.00r.

Midland-Ross Corporation: *See—*
Blount, Walter H., 3,686,866.

Midori-Kai Co., Ltd., The, mesne: *See—*
Watanuki, Toshio, 3,687,530.

Midwestern Specialties, Limited: *See—*
Stanley, Richard C.; and Lewis, Jesse M., 3,687,704.
Stanley, Richard C.; Thatcher, Charles R.; and Poore, Ernest C., 3,687,706.

Mielback, Roger L.; and Scheuer, Nicholas G., to Josam Manufacturing Co. Compact closet carrier. 3,686,695, Cl. 4-252.00r.

Migeotte, Paul, to Institut Nationale du Verre A.S.B.L. Apparatus for detecting the angular deflection imparted to a beam passing through a transparent sheet. 3,688,235, Cl. 356-239.000.

Miki, Ryoji; Kayashima, Kouzo; and Tsuneo, Uraki, to Hitachi, Ltd. Automatic clock pulse frequency switching system. 3,688,200, Cl. 328-62.000.

Mildner, Raymond C.: *See—*
Clock, Gerald E.; Mildner, Raymond C.; and Walters, Harold A., 3,687,748.

Miller, Charles C.; and Rumberger, William E., to Boeing Company, The. Chip detecting and monitoring device. 3,686,926, Cl. 73-61.00r.

Miller, Clark Ober, to Lubrizol Corporation, The. Nitrogen-and phosphorus-containing compositions. 3,687,645, Cl. 44-63.000.

Miller, Delmar S.; and Cushman, Kenneth V. Installation tool for fasteners requiring rotary and axial movements. 3,686,915, Cl. 72-114.000.

Miller, Edwin, to Constellation Science and Technology Corporation. Electronic key lock having data coded key. 3,688,269, Cl. 340-149.00r.

Miller, George J., to SCM Corporation. Liquid development of latent electrostatic images. 3,687,708, Cl. 117-37.01e.

Miller, Leo A.: *See—*
Terrana, Jack D.; and Miller, Leo A., 3,687,623.
Terrana, Jack D.; and Miller, Leo A., 3,687,624.
Terrana, Jack D.; and Miller, Leo A., 3,687,625.

Miller, Peter; and Call, Charles G., to Security Systems, Inc. Property protection system employing laser light. 3,688,298, Cl. 340-258.00b.

Miller, Robert; Clarkson, Robert J.; and Cesare, Frank C., to Uniroyal, Inc. Highly resilient polypropylene yarn. 3,686,848, Cl. 57-140.00r.

Miller, Ronald Earl. Vehicle suspension. 3,687,477, Cl. 280-104.50a.

Miller, Stewart Edward; and Personick, Stewart David, to Bell Telephone Laboratories, Incorporated. Reduction of dispersion in multimode waveguide. 3,687,514, Cl. 350-96.0wg.

Mills, Carroll B.; and Brasier, Robert I., to United States of America, Atomic Energy Commission. Compact and safe nuclear reactor. 3,687,804, Cl. 176-50.000.

Mills, Kenneth Wilson, to Vernon & Company (Pulp Products) Limited. Walls, screens and the like. 3,686,791, Cl. 47-34.120.

Milovich, Walter E., to Ace Tool Engineering Co., Inc. Fishing tackle. 3,686,787, Cl. 43-44.900.

Mine Safety Appliances Company: *See—*
Strange, John P.; Nebash, Stanley P.; McInnes, Alexander C.; and McConnaughey, Paul W., 3,686,835.

Minich, Paul R., Jr.; and Shaver, Donald E., to C & M Manufacturing Company, Inc. Mobile power washer. 3,687,156, Cl. 137-334.000.

Minks, Floyd M. Controlled electrical pulse source. 3,687,123, Cl. 123-148.00e.

Minnesota Mining and Manufacturing Company: *See—*
DeVries, Richard Alan, 3,687,533.
Hoerner, Alfred J., 3,687,251.
Kilbane, George J., 3,687,705.

Minolta Camera Co., Ltd.: *See—*
Kobayashi, Tatsuo; and Ueda, Hiroshi, 3,687,026.

Minolta Camera Kabushiki Kaisha: *See—*
Kuramoto, Yoshio; Okamoto, Akio; and Kobori, Toshio, 3,686,711.

Miraldi, Floro D., to Case Western Reserve University. Tomographic radiation sensitive device. 3,688,113, Cl. 250-71.50r.

Mirels, Harold: *See—*
Spencer, Donald J.; Mirels, Harold; Jacobs, Theodore A.; and Gross, Rolf W. F., 3,688,215.

Misomex Aktiebolag of Ellen Keys Gata: *See—*
Soe, Hartvig, 3,686,763.

Mitsubishi Gas Chemical Company Inc.: *See—*
Miyamoto, Akira; and Akiyama, Hiroyuki, 3,687,592.

Mitsubishi Petrochemical Co., Ltd.: *See—*
Shiraishi, Masao; and Maeda, Kiyoshi, 3,687,911.

Mitsui, Nobuo; Hatakeyama, Takanobu; and Komuro, Katsu, to Hitachi, Ltd. Control apparatus for an elevator car. 3,687,235, Cl. 187-29.00r.

Miura, Mitsugi. Apparatus for the removal of filter cake by liquid injection. 3,687,292, Cl. 210-225.000.

Miura, Yotaro: *See—*
Inaga, Katsu; and Miura, Yotaro, 3,688,055.

Miura, Yotaro; and Asami, Shojiro, to Sony Corporation. Tape recorder with pivotally mounted cassette loading plate having rotable tape guiding fincers. 3,688,059, Cl. 179-100.200.

Miyamoto, Akira; and Akiyama, Hiroyuki, to Mitsubishi Gas Chemical Company Inc. Apparatus for producing thermoplastic synthetic resin foamed products. 3,687,592, Cl. 425-376.000.

Miyamoto, Norimasa: *See—*
Akeyama, Kenji; and Miyamoto, Norimasa, 3,686,698.

Miyano, Masateru: *See—*
Colton, Frank B.; Marsheck, William J.; and Miyano, Masateru, 3,687,811.

Mizui, Seiichiro; and Takishima, Yoshiyuki, to Canon Kabushiki Kaisha. Electric shutter blade actuating device for a photographing apparatus. 3,687,042, Cl. 95-53.0ea.

Moberly, Charles W.: *See—*
Crouch, Willie W.; and Moberly, Charles W., 3,687,907.

Mobil Oil Corporation: *See—*
Chen, Albert C.; Butter, Stephen A.; and Hobson, Richard W., 3,687,988.
Givens, Wyatt W., 3,688,117.
Jenkins, Edwin Earl, 3,687,839.
Lake, Connie, 3,687,408.
Ritter, Sammie F., 3,687,218.
Warburton, Richard T., 3,687,350.

Mochizuki, Toyoju; and Watanabe, Mamoru. Intensifying cylinder of a brake apparatus. 3,686,865, Cl. 60-54.5ha.

Modrey, Henry John. Roller metal pin for use as electric connector or fastener. 3,688,248, Cl. 339-258.00r.

Moehlenpah, Walter G.; and Farnsworth, Dennis G., to Hydro-Air Engineering, Inc. Carriage with track clamp. 3,687,239, Cl. 188-43.000.

Moelants, Felix Jan: *See—*
Rillaers, Guy Alfred; Depoorter, Henri; and Moelants, Felix Jan, 3,687,670.

Moeller & Neumann GmbH: *See—*
Neumann, Karl Josef; and Ostbringhaus, Otto, 3,687,446.

Moeller, Harmann: *See—*
Andres, Rudolf; and Moeller, Harmann, 3,687,215.

Moertel, George B.: *See—*
Johnston, James R.; and Moertel, George B., 3,686,719.

Moffatt, John G.: *See—*
Verheyden, Julien P.; and Moffatt, John G., 3,687,931.

Mollick, Minton, to Ametek, Inc. True air speed indicator. 3,686,944, Cl. 73-182.000.

Monroe Belgium N.V.: *See—*
Fader, John H.; Keijzer, Johan H.; and Graulus, Marcel J. R., 3,687,480.

Monsanto Company: *See—*
Bollinger, Frederic G.; and D'Amico, John J., 3,687,653.
Dyroff, David R., 3,687,695.
Erpelding, William J., Jr., 3,688,294.
Feiler, William A.; and Shen, Chung Yu, 3,687,992.
Reisman, Abraham J.; and Wilkinson, Thomas B., III, 3,687,767.
Riordan, Frank S., Jr., 3,687,752.
Scharpf, Lewis G., Jr., 3,687,815.

Monsanto Research Corporation: *See—*
Byrne, Joseph J., 3,687,747.

Montecatini Edison S.p.A.: *See—*
Credali, Lino; and Parrini, Paolo, 3,687,842.

Montgomery, William Lloyd, to Bell Telephone Laboratories, Incorporated. Digital attenuator for non-linear pulse code modulation signals. 3,688,097, Cl. 235-152.000.

Mooradian, Aram: *See—*
Alexander, Ernest John; and Mooradian, Aram, 3,687,969.

Moore, Alvin Edward. Light-weight, wreck-resisant cabin. 3,687,401, Cl. 244-119.000.

Moore Business Forms Inc.: *See—*
Sandbach, Peter, 3,687,386.

Moore, Carl O., to Staley, A. E., Company. Confection and method of making it. 3,687,690, Cl. 99-134.00b.

Moore, Fletcher L., to United States of America, Atomic Energy Commission. Separation and recovery of americium from curium and other elements. 3,687,641, Cl. 423-6.000.

Moore, Franklin: *See—*
Kocher, Robert; Moore, Franklin; and Samelson, Harold, 3,688,216.

Moore, Harold R.: *See—*
Boaz, Virgil L.; and Moore, Harold R., 3,688,236.

Moore, Harold R.; Robin, Harral T.; and Wallace, William B., to Westinghouse Electric Corporation. Electrical inductive apparatus having serially interconnected coils. 3,688,233, Cl. 336-183.000.

Moore, Richard D.: *See—*
Ayling, John K.; and Moore, Richard D., 3,688,280.

Moore, Robert H.: *See—*
Jimerson, Bruce D.; and Moore, Robert H., 3,687,817.

Moorhusen, Robert W., to Xerox Corporation. Short focal length optical imaging system. 3,687,545, Cl. 355-65.000.

Moormeier, Louis F.: *See—*
Hansley, Virgil L.; Schott, Stuart; and Moormeier, Louis F., 3,687,619.

Morgan, George W., to Swbsea Equipment Associates Limited, mesne. Submerged storage unit. 3,686,875, Cl. 61-46.000.

Morgan Information Systems, Inc.: *See—*
Morgan, Robert A.; and Tarver, Fred E. (said Tarver assor. to), 3,687,035.

Morgan, R. A., Co., Inc.: *See—*
Morgan, Robert A.; and Tarver, Fred E. (said Morgan assor. to), 3,687,035.

Morgan, Robert A.; and Tarver, Fred E., said Morgan assor. to Morgan, R. A., Co., Inc. and said Tarver assor. to Morgan Information Systems, Inc. Image motion compensation means for camera apparatus. 3,687,035, Cl. 95-12.500.

Morganite Resistors Limited: *See—*
Adwick, Albert Graham; and Nicholson, Henry, 3,688,242.

Mori, Ernest A., to Gulf Research & Development Company. Floating rig motion compensator. 3,687,205, Cl. 175-27.000.

Mori, Kenichi: *See—*
Itjima, Taizo; and Mori, Kenichi, 3,688,267.
Watanabe, Sadakazu; Mori, Kenichi; Yoneyama, Tsuneo; and Genchi, Hiroshi, 3,688,266.

Mori, Taketoshi; and Iwatake, Sizuo. Skid beam supporting structure for the heating of walking beam type. 3,687,427, Cl. 263-6.00a.

Morley, Ronald I.; Biernat, Raymond W.; and Smidt-Hayer, Arnold J., to Dymo Industries, Inc. Addressing apparatus. 3,688,112, Cl. 250-65.00t.

Morris, Arthur L.: *See—*
Colclough, Terence; Morris, Arthur L.; and Hodges, Robert J., 3,687,848.

Morris, Harold B. Seismic impulse generation technique. 3,687,228, Cl. 181-.5sc.

Morris, Harold B., to Electronic Systems, Inc. Geophone. 3,688,251, Cl. 340-17.000.

Morris, Joel Morton, to Bell Telephone Laboratories, Incorporated. Switching system charging arrangement. 3,688,047, Cl. 179-7.00r.

Morris, Lewis C., to RCA Corporation. High speed tunable maser for use in radar and communication receivers. 3,688,207, Cl. 30-4.000.

Morrison, Richard J.; and Ross, Sidney D., to Sprague Electric Company. Silica surface treatment. 3,687,718, Cl. 117-106.00a.

Mosely, Graham H.: *See—*
Carlson, Heinz F.; Isaac, George L.; and Mosely, Graham H., 3,687,345.

Moser, Murtha E.: *See—*
Lynch, John F.; Moser, Murtha E.; and Nichols, Raymond A., 3,687,288.

Moser, Raymond L.; Oldenburg, Dorrance; and Sunderlin, Donald E., to Caterpillar Tractor Company. Compactor sheel configuration. 3,687,023, Cl. 94-50.0pr.

Mosli, Ernst; and Zurbuchen, Louis, to Werkzeugmaschinenfabrik Oerlikon Buhrle AG. Motor driven feed mechanism for feeding a cartridge belt through a channel to an automatic firearm. 3,687,002, Cl. 89-33.00e.

Mossman, Donald P., Sr. Cook stove grid. 3,687,127, Cl. 126-215.000.

Motl, Daniel M., to Allied Power Industries, Inc. Automobile air conditioner test and service equipment. 3,686,954, Cl. 73-432.00r.

Motorola, Inc.: *See—*
Burns, Clence L., 3,688,179.
Gay, Michael J., 3,688,220.
Havens, Richard Calvin, 3,688,219.
Kern, Neil C., 3,688,313.
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Moulding, Kenneth William: *See—*
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Mueller, Alfred: *See—*
Distler, Harry; Widder, Rudi; Stanger, Bernd; Muellr, Alfred; Druschke, Wolfgang; Mueller, Alfred; and Druschke, Wolfgang, 3,687,886.

Mueller Co.: *See—*
Leopold, Wilbur R.; Hackman, Frank C.; Floren, Carl E.; and Gould, Wallace E., 3,687,492.

Mueller, Francis X., Jr.; and Brown, James D., to Phillips Petroleum Company. Organoaluminum compounds as adjuvants in an organocalcium initiated polymerization of conjugated dienes and/or monovinyl aromatic compounds. 3,687,916, Cl. 260-83.700.

Mueller, Frank H. Rotary plug valve. 3,687,416, Cl. 251-164.000.

Mueller, Hans J.: *See—*
Lawrence, George; and Mueller, Hans J., 3,688,285.

Mueller, Leonard E., 40% to Brown, Carl R. Ground effect vehicle. 3,687,217, Cl. 80-120.000.

Mueller, Wolfgang H.: *See—*
Oswald, Alexis A.; and Mueller, Wolfgang H., 3,687,830.

Muellr, Alfred: *See—*
Distler, Harry; Widder, Rudi; Stanger, Bernd; Muellr, Alfred; Druschke, Wolfgang; Mueller, Alfred; and Druschke, Wolfgang, 3,687,886.

Muller, Hans: *See—*
Sommer, Reinhold, 3,687,471.

Muller, Jean Jacques, to International Standard Electric Corporation. Normally silent mobile radio telephone system. 3,688,195, Cl. 325-55.000.

Muller, Rudolf. Electrophotographic copying machine. 3,687,544, Cl. 355-57.000.

Mullins, Albert A., to Schlumberger Technology Corporation. Drillable slip. 3,687,196, Cl. 166-217.000.

Munster, Franz: *See—*
Rheude, Franz Gustav; Munster, Franz; and Brehmer, Harald, 3,687,714.

Murakami, Keiichi: *See—*
Susuki, Rinnosuke; Hoshi, Hiroshi; Saito, Jiro; Murakami, Keiichi; and Hirakawa, Michio, 3,687,890.

Murakami, Masuo; Kawahara, Shigemi; Inukai, Noriyoshi; Ishida, Sanae; Imai, Kazuo; and Ozasa, Teruaki, to Yamanouchi Pharmaceutical Co., Ltd. 2-Amino or methyl sulfonyl-6-amino sulfonyl or methyl sulfonyl-4,8 dipiperidino or morpholino-pyrimido [5,4-d] pyrmidines. 3,687,950, Cl. 260-246.00b.

Murata Kaisha Kikai Kabushiki: *See—*
Matsui, Isamu; Nagasawa, Isao; Horiuchi, Tatsuo; Uchida, Hiroshi; and Uehara, Masao, 3,687,382.

Murfitt, Donald; and Peeso, James Bruce, Jr., to American Cyanamid Company. Fabrication of plastic spinnerettes by means of stacked mandrels. 3,687,413, Cl. 249-160.000.

Murphy, G. W., Industries, Inc.: *See—*
Jacyno, Anthony; and Holther, Grover P., 3,688,138.

Murphy, John Brian: *See—*
Donohue, Thomas W.; Murphy, John Brian; and Bissett, Thomas B., 3,688,296.

Murphy, William M.; and Beauchemin, Norman J., to Lodding Engineering Corporation. Doctor cleaning methods and apparatus with scanning suction port. 3,687,730, Cl. 134-21.000.

Murray, David B.: *See—*
Porter, John H.; and Murray, David B., 3,686,958.

Muschell, James E. Removable pier construction. 3,686,876, Cl. 61-48.000.

Muskulus, Willi: *See—*
Kramer, Willi; and Muskulus, Willi, 3,687,303.

Muter, Bryce A.: *See—*
Chiasson, Wilbert A.; Barhorst, Ralph E.; and Muter, Bryce A., 3,688,180.

Muzyczko, Thaddeus M.; Shore, Samuel; and Loboda, Jon A., to Richardson Company, The. Detergent compositions. 3,687,870, Cl. 252-545.000.

Myers, Ned C., to Robertshaw Controls Company. Vacuum operated electrical switch with cup shaped diaphragm normally holding controls closed. 3,688,064, Cl. 200-83.00n.

Myers, Neo, to Robertshaw Controls Company. Pneumatic control system and temperature responsive valve construction therefor or the like. 3,687,290, Cl. 210-149.000.

Nadelson, Jeffrey: *See—*
Houlihan, William J.; and Nadelson, Jeffrey, 3,687,975.

Nagasawa, Isao: *See—*
Matsui, Isamu; Nagasawa, Isao; Horiuchi, Tatsuo; Uchida, Hiroshi; and Uehara, Masao, 3,687,382.

Nagasawa, Masahiro; and Watanabe, Hiroyuki, to Matsushita Electric Industrial Co., Ltd. Thin film non-rectifying negative resistance device. 3,688,160, Cl. 317-238.000.

Nagase, Shunji; Abe, Takashi; Baba, Hajime; and Kodaira, Kazuo, to Industrial Science & Technology, Agency of. Process for the production of trifluoromethyl hypofluorite. 3,687,825, Cl. 204-59.000.

Naito, Yoshiyuki: *See—*
Suetake, Kunihiro; and Naito, Yoshiyuki, 3,688,224.

Nakada, Akira: *See—*
Hoshino, Yutaka; Iwaki, Yoshikazu; Matsukawa, Koshiro; Nakada, Akira; Sato, Fumio; and Uno, Kazuo, 3,687,913.

Nakahara, Kazuyuki: *See—*
Numata, Hide; and Nakahara, Kazuyuki, 3,687,363.

Nakamachi, Hideo; Kamiya, Kazuhide; Nishikawa, Masao; and Fujii, Shoichiro, to Takeda Chemical Industries, Ltd. Crystalline cytidine-5'-diphosphate choline monohydrate and production thereof. 3,687,932, Cl. 260-211.50r.

Nakamura, Norio: *See—*
Iwai, Isseu; Kishida, Yukichi; Hiroaka, Tetsuo; and Nakamura, Norio, 3,687,968.

Nakanishi, Tsunemoto: *See—*
Suzuki, Akira; Esashi, Yoshiaki; and Nakanishi, Tsunemoto, 3,687,397.

Nakashima, Yasutaka: *See—*
Kozu, Isao; and Nakashima, Yasutaka, 3,686,851.

Nakayama, Kiyoshi; and Hagino, Hiroshi, to Kyowa Hakko Kogyo Co., Ltd. Process for producing L-lysine from L-aspartic acid. 3,687,809, Cl. 195-29.000.

Nalco Chemical Company: *See—*
Gilson, Ian T.; Troscinski, Edwin S.; Curtis, Thomas C.; and Watson, Robert G., 3,687,610.

Narang, Chander K., to Burroughs Corporation. Digital data communication system providing a recirculating pollof a plurality of remote terminal units. 3,688,273, Cl. 340-172.500.

Nash, Dudley O., to General Electric Company. Swivelable jet nozzle. 3,687,374, Cl. 239-265.350.

Nash Engineering Company: *See—*
Libby, Clarence R., 3,686,831.

Nast, Roland; Dahm, Manfred; Ley, Kurt; and Schubart, Rudiger, to Farbenfabriken Bayer Aktiengesellschaft. Polyurethane foams stabilized with 5-hydroxy coumarans. 3,687,875, Cl. 260-2.5bb.

Nast, Roland; Dahm, Manfred; and Ley, Kurt, to Farbenfabriken Bayer Aktiengesellschaft. Polyurethane foams stabilized with 6-hydroxy chromans. 3,687,876, Cl. 260-2.5bb.

Natali, Remigio; and Giombini, Giuseppe, to Colgate-Palmolive Company. Granulation process. 3,687,853, Cl. 252-89.000.

Natelson, Samuel, to Rohe Scientific Corporation. System for transferring liquids between containers. 3,687,632, Cl. 23-259.000.

National Blank Book Company, Inc.: *See—*
Sheehan, Robert F., 3,686,780.

National Can Corporation: *See—*
Zenger, Richard D.; and Lewis, Albert F., 3,686,820.

National Cash Register Company, The: *See—*
Jones, Clarence L., 3,687,256.

National Distillers and Chemical Corporation: *See—*
Hansley, Virgil L.; Schott, Stuart; and Moormeier, Louis F., 3,687,619.

National Research Development Corporation: *See—*
Brain, Thomas John Stirrat, 3,688,106.

National-Standard Company: *See—*
Rawls, Vaughn; and Howard, Walter B., 3,687,781.

Naubereit, Henry; and Picard, Salvatore A., to United States of America, Navy. Signal comparator system. 3,688,202, Cl. 328-133.000.

Nebash, Stanley P.: *See—*
Strange, John P.; Nebash, Stanley P.; McInnes, Alexander C.; and McConnaughey, Paul W., 3,686,835.

Needham, Robert F.: *See—*
Yurkoski, Frank R.; Coyle, Edward L.; Needham, Robert F.; and Rollins, Dallas W., 3,687,087.

Negishi, Naoki: *See—*
Hori, Shin; Inoue, Tomiyoshi; Yamamoto, Shozo; Tatara, Kazuo; Kitagawa, Mashiro; Watanabe, Masaru; Okada, Yukihiko; and Negishi, Naoki, 3,686,832.

Negus, George T.: *See—*
Cumbo, Peter E.; Hart, James L.; Kao, Peter T.; and Negus, George T., 3,687,751.

Neitzel, Ulrich E. G., to Great Salt Lake Minerals and Chemicals Corporation. Process for recovering sodium and sulfate values from schoenite-conversion end liquors. 3,687,638, Cl. 23-296.000.

Nelen, Igor Mikhailovich; and Goryachkin, Vladimir Ivanovich. Method of purifying sulphur from arsenic. 3,687,628, Cl. 423-578.000.

Nelson, Leroy E., to Winzen Research, Inc. Circular clamp for balloons or the like. 3,686,721, Cl. 24-243.00k.

Nelson Muffler Corporation: *See—*
Nelson, Ralph H., 3,687,225.

Nelson, Ralph H., to Nelson Muffler Corporation. Combined exhaust muffler with spark arrester. 3,687,225, Cl. 181-36.00c.

Nerwin, Hubert, to Eastman Kodak Company. Film cartridge and camera employing same. 3,687,037, Cl. 95-31.00r.

Nesseth, Clinton A. Manure transfer and storage system. 3,687,311, Cl. 214-16.00r.

Nestle, Alfred C., to Texaco Inc. Corrosion control. 3,687,608, Cl. 21-2.500.

Nette, Friedrich Wilhelm. Crushing device. 3,687,379, Cl. 241-147.000.

Neumann, Karl Josef; and Ostbringhaus, Otto, to Moeller & Neumann GmbH. Transfer device for metal plates. 3,687,446, Cl. 271-63.000.

Neumeister, Alvin W., to Goodyear Tire & Rubber Company, The. Cord creel. 3,687,394, Cl. 242-131.000.

Neuroth, Norbert: *See—*
Faulstich, Marga; and Neuroth, Norbert, 3,687,697.

Newcomer, Jack S.: *See—*
Greenbaum, Sheldon B.; Weil, Edward D.; and Newcomer, Jack S., 3,687,831.

Newman, Don Eric. Rockable gym support surface. 3,687,449, Cl. 272-56.000.

Newman, Leonard: *See—*
Gustafson, Walter R.; McMillen, William H.; Kemper, Jackson, Jr.; and Newman, Leonard, 3,688,312.

Newman, Michael; and Boocock, David, to British Railways Board. Lateral motion truck. 3,687,085, Cl. 105-171.000.

Nichicon Capacitor Limited: *See—*
Inoue, Kiyoshi, 3,687,735.

Nichols, Raymond A.: *See—*
Lynch, John F.; Moser, Murtha E.; and Nichols, Raymond A., 3,687,288.

Nichols, Troy R.: *See—*
Rosenfeld, Myer; and Nichols, Troy R., 3,687,857.

Nicholson, Henry: *See—*
Adwick, Albert Graham; and Nicholson, Henry, 3,688,242.

Nickels, William M., to Norgren, C. A. Selector valve with O-ring seals. 3,687,163, Cl. 137-625.110.

Niehuus, Hans-Christian: *See—*
Lieb, Albert; and Niehuus, Hans-Christian, 3,688,143.

Nielsen, Arne E.: *See—*
Rasmussen, Ole-Bendt; Madsen, Willy Buch; and Nielsen, Arne E., 3,686,853.

Nilsson, Erland: *See—*
Johansson, Bengt; and Nilsson, Erland, 3,688,155.

Nippon Electric Company, Limited: *See—*
Ishiguro, Tatsuo, 3,688,039.

Nippon Gakki Seizo Kabushiki Kaisha: *See—*
Suzuki, Akihisa, 3,688,054.

Nippon Kogaku K. K.: *See—*
Kawakami, Tadashi, 3,687,038.

Nippon Kogaku K.K.: *See—*
Furuta, Koichi, 3,687,039.
Yamamoto, Tadaaki; and Kasai, Toshiyuki, 3,687,555.

Nippon Soda Co., Ltd.: *See—*
Hoshino, Yutaka; Iwaki, Yoshikazu; Matsukawa, Koshiro; Nakada, Akira; Sato, Fumio; and Uno, Kazuo, 3,687,913.

Nippondenso Co., Ltd.: *See—*
Oishi, Kazuo; Ando, Noriyoshi; and Yoshida, Hiroshi, 3,688,306.

Nippondenso Kabushiki Kaisha: *See—*
Yonezu, Hisashi, 3,688,134.

Nisbet, John L.; and Woodall, Hubert C., Jr., to Carolina Narrow Fabric Company. Method of forming glass fabric suitable for casts, bandages, and the like. 3,686,725, Cl. 28-74.00r.

Nishi, Tsuyoshi: *See—*
Masuyama, Takeshi; Matsuoka, Michio; and Nishi, Tsuyoshi, 3,687,871.

Nishikawa, Masao: *See—*
Nakamachi, Hideo; Kamiya, Kazuhide; Nishikawa, Masao; and Fujii, Shoichiro, 3,687,932.

Nistri, Ugo: *See—*
Vargiu, Silvio; Giovanni, Sesto S.; Nistri, Ugo; and Pezzoli, Silvestro, 3,687,896.

Nistri, Ugo; Busti, Benito; and Grazzini, Giulio, to Societa Italiana Resine S.p.A. Process for the production of synthetic rubbers. 3,687,915, Cl. 260-83.300.

Nittan Company, Limited: *See—*
Kobayashi, Akihiro, 3,688,119.

Nittel, Fritz: *See—*
Kreuder, Manfred; Metzner, Wolfgang; Sobel, Johannes; Himmelmann, Wolfgang; and Nittel, Fritz, 3,687,671.

Nixon, Paul A. Rear mounted snowmobile cargo box with tow bar extension. 3,687,344, Cl. 224-29.00r.

Noe, Robert Joseph: *See—*
Verhille, Karel; Conix, Andre Jan; and Noe, Robert Joseph, 3,687,658.

Nomura, Kazuhiko, to Yamaha Hatsudoki Kabushiki Kaisha. Crank chamber compression-type two-cycle engine. 3,687,118, Cl. 123-73.00r.

Nomura, Seinosuke: *See—*
Okada, Sadayuki; and Nomura, Seinosuke, 3,686,845.

Norcross, Austin S., to Norcross Corporation. Detector for viscosity measuring system. 3,686,931, Cl. 73-57.000.

Norcross Corporation: *See—*
Norcross, Austin S., 3,686,931.

Norcross, Inc.: *See—*
Boylan, Thomas E., 3,687,091.

Norgren, C. A.: *See—*
Nickels, William M., 3,687,163.

Norris, Philip R., to Polaroid Corporation. Multiple zone stereo rangefinder. 3,687,041, Cl. 95-44.00c.

North American Car Corporation, mesne: *See—*
Johnstone, Cyril Patrick, 3,687,369.

Nothnagle, Paul E.; and Rosenberger, Harold E., to Bausch & Lomb Incorporated. Substage illuminating mirror for a stereomiscroscope. 3,687,520, Cl. 350-87.000.

Notter, Eugen: *See—*
Eggemmuller, Alfred; Scherer, Lorenz; Notter, Eugen; Bellan, Heinrich; and Wagler, Werner, 3,687,061.

Nottingham, J. B., & Co., Inc.: *See—*
Savoca, Paul C.; and Marasco, Anthony D., 3,688,244.

Novar Corporation: *See—*
Bennett, William C.; Condon, David C.; and Brink, Rodney O., 3,688,286.

Novet, Hanspeter: *See—*
Zurbuchen, Louis; and Novet, Hanspeter, 3,687,003.

Nozoe, Tetsuo: *See—*
Sato, Akiro; Sonoda, Minoru; Shiba, Keisuke; Hinata, Mansanao; and Nozoe, Tetsuo, 3,687,674.

Numata, Hide; and Nakahara, Kazuyuki, to Oval Engineering Co., Ltd. Digital-analogue converter. 3,687,363, Cl. 235-200.000.

Nutrico, Inc.: *See—*
Krause, Ronald O.; and Ayala, Kenneth J., 3,687,151.

Nuwayser, Elie S., to Abcor Inc. Contraceptive device and method of employing same. 3,687,129, Cl. 128-1.00r.

N.V. Offringa: *See—*
Kruiger, Kornelis, 3,686,959.

N.V. Optische Industrie de Oude Delft: *See—*
Bouwers, Albert, 3,688,146.

Ny Met Industries, Inc.: *See—*
Brodnicki, Anthony F., 3,686,715.

Oberkirch, Wolfgang; Gunther, Peter; and Pampus, Gottfried, to Farbenfabriken Bayer Aktiengesellschaft. Process for the production of cis-polypentenamers. 3,687,921, Cl. 260-88.20r.

Ocean Sales, Inc.: *See—*
Epper, Karl F., 3,687,111.

Oceanography Development Corporation: *See—*
Price, Harold J.; and Snyder, Robert M., 3,687,556.

Odhner, Oliver Randolph. Method and apparatus for determining the concentricity of wire within its coating of insulation. 3,687,557, Cl. 356-156.000.

Odier, Marc. Set of playing pieces. 3,687,455, Cl. 273-137.0ae.

Odnolko, Valentin Vladimirovich; and Uzilevsky, Vladimir Aronovich, to Leningradsky Elektrotekhnichesky Institut svyazi imeni Professora M.A. Method and system for the dot-pattern recording of halftone images. 3,688,026, Cl. 178-6.700.

Odsvall, Jan: *See—*
Wijard, Endel; and Odsvall, Jan, 3,687,635.

Oertter, Josef: *See—*
Grob, Karl; Oertter, Josef; and Wiesner, Paul, 3,687,844.

Oesterreichisch-Amerikanische Magnesit Aktiengesellschaft: *See—*
Weiss, Viktor, 3,687,286.

Oesterritter, William M. Interpretation method for use in X-ray diffraction and X-ray fluorescence analysis. 3,686,764, Cl. 33-100.00c.

Offer, Robert J.: *See—*
Hopkins, John D.; McLaren, James C.; Johnson, Ronald A.; and Offer, Robert J., 3,686,837.

Ofrex Group Limited: *See—*
Crane, Denis Percy; and Joyce, Edgar, 3,688,082.

Ogawa, Takuzo: *See—*
Tsukuda, Kiyoshi; Kamei, Tatsya; and Ogawa, Takuzo, 3,688,164.

Ogirima, Masahiko; Kusumoto, Hazime; and Shinoda, Toshimitu, to Dynamit Nobel Aktiengesellschaft. Method for producing injection type light emitting semiconductor devices having an epitaxial layer of nitrogen-doped gallium phosphide. 3,687,744, Cl. 148-175000.

Ohara, Katsunobu: *See—*
Komiya, Takao; Tosaka, Umi; Ihara, Takashi; Matsuo, Takehiko; and Ohara, Katsunobu, 3,687,659.

Ohashi, Azusa; and Ishiwata, Mamoru, to Fuji Shashin Film Kabushiki Kaisha. Production of photographic sensitive materials. 3,687,703, Cl. 117-16.000.

Ohdan, Kyoji: *See—*
Yamada, Keisho; Umemura, Sumio; Ohdan, Kyoji; Hidaka, Mikio; Fukuda, Kazuo; and Sawazi, Masao, 3,688,002.

Ohkoshi, Takanori. Method for photographing and reproducing three-dimensional images. 3,688,045, Cl. 178-6.500.

Ohlinger, Manfred: *See—*

Hartmann, Hans Joerg; Leonhard, Karl Wilhelm; Ohlinger, Manfred; and Schwarzmann, Matthias, 3,687,851.

Ohno, Yoshio; Eda, Korekiyo; Tamamura, Toshio; and Yamasaki, Kosaburo, to Kanegafuchi Boseki Kabushiki Kaisha. Apparatus for preparing a multi-layer structure. 3,687,784, Cl. 156-500.000.

Ohta, Shoji: *See—*
Goshima, Takeshi; Ohta, Shoji; and Imai, Nobuhiro, 3,687,395.

Oishi, Kazuo; Ando, Noriyoshi; and Yoshida, Hiroshi, to Nippondenso Co., Ltd. Digital type rotational angle detector. 3,688,306, Cl. 340-347.00p.

Okada, Minoru: *See—*
Yamaya, Taiji; and Okada, Minoru, 3,688,169.

Okada, Sadayuki; and Nomura, Seinosuke, to Gijutsu Kenkyu Kumiai Amaike Kenyusho and Daido Reare Kabushiki Kaisha. Apparatus for producing a non-irregular twist yarn. 3,686,845, Cl. 57-34.0hs.

Okada, Yukihiko: *See—*
Hori, Shin; Inoue, Tomiyoshi; Yamamoto, Shozo; Tatara, Kazuo; Kitagawa, Mashiro; Watanabe, Masaru; Okada, Yukihiko; and Negishi, Naoki, 3,686,832.

Okamoto, Akio: *See—*
Kuramoto, Yoshio; Okamoto, Akio; and Kobori, Toshio, 3,686,711.

Okamoto, Shuji: *See—*
Suzuki, Ruuzo; Sato, Sumihisa; Okamoto, Shuji; Shinozaki, Akira; and Doi, Tatsumi, 3,687,542.

Okamoto, Takanori: *See—*
Matsuda, Hideaki; and Okamoto, Takanori, 3,687,860.

Okamura, Saburo. Combined silencer and exhaust gas cleaner. 3,687,637, Cl. 23-288.00f.

Okimoto, Kiyomi: *See—*
Masaki, Mitsuo; Fukui, Kiyoshi; Ueda, Masahiro; and Okimoto, Kiyomi, 3,687,938.

Okura Kogyo Kabushiki Kaisha: *See—*
Matsuda, Hideaki; and Okamoto, Takanori, 3,687,860.

Oldenburg, Dorrance: *See—*
Moser, Raymond L.; Oldenburg, Dorrance; and Sunderlin, Donald E., 3,687,023.

O'Leary, Walter E.; and Charles, Asa Franklin, to ACF Industries, Incorporated. Articulated car train. 3,687,084, Cl. 105-4.00r.

Olympus Optical Co., Ltd.: *See—*
Matumoto, Sakuzo, 3,686,766.

Omron Tateisi Electronics Co.: *See—*
Uryu, Sadayuki; and Ueda, Hirosi, 3,688,254.

Optische Werke G. Rodenstock: *See—*
Schlegel, Franz; and Graf, Josef, 3,687,523.

Orenstein & Koppel Aktiengesellschaft: *See—*
Scholler, Gerhard; Baschant, Robert; and Hausler, Alfred, 3,686,871.

Original Hanau Quarzlamken G.m.b.H.: *See—*
Kockott, Dieter, 3,686,940.

Orlando, Daniel; and Smith, George Paul, to Globe-Union Inc. Storage battery electrical connectors. 3,687,734, Cl. 136-134.00r.

Orosz, Alex, Jr.; and St. Clair, Lawrence B., to Westinghouse Electric Corporation. Fused circuit breaker. 3,688,237, Cl. 337-7.000.

Osaka, Takashi, to Kabushiki Kaisha Komatsu Seisakusho. Control device for gradually increasing fluid pressure. 3,687,152, Cl. 137-115.000.

Ostbergs Fabriks AB: *See—*
Lindblom, Karl Thore, 3,687,271.

Ostbringhaus, Otto: *See—*
Neumann, Karl Josef; and Ostbringhaus, Otto, 3,687,446.

Ostrager, Seymour A. Self-ejecting chuck key. 3,686,985, Cl. 81-90.00a.

Oswald, Alexis A.; and Mueller, Wolfgang H., to Esso Research and Engineering Company. Preparation of thiol esters. 3,687,830, Cl. 204-158.00r.

Oswald, May, to Klockner-Humboldt-Deutz Aktiengesellschaft. Method and apparatus for monitoring the performance of a draft vehicle. 3,686,935, Cl. 73-112.000.

Otis Engineering Corporation: *See—*
Young, Carter R.; and Mc Casland, Leonard, 3,687,202.

Ott, John, Laboratories, Inc.: *See—*
Ott, John Nash, 3,688,121.

Ott, John Nash, to Ott, John, Laboratories, Inc. Shielded optical system for viewing an illuminated device producing penetrating radiation. 3,688,121, Cl. 250-108.00r.

Oulton, Richard John, to Pilkington Brothers Limited. Heating and bending of glass sheets during vertical conveyance. 3,687,648, Cl. 65-25.000.

Outboard Marine Corporation: *See—*
Kolorz, Bruno, 3,687,124.

Oval Engineering Co., Ltd.: *See—*
Numata, Hide; and Nakahara, Kazuyuki, 3,687,363.

Owen, Keith: *See—*
Delafield, David J.; Edwards, Alan H.; and Owen, Keith, 3,687,644.

Owen, Ronald C. Container package. 3,687,282, Cl. 206-65.00s.

Owen, William John: *See—*
Jonas, David Andrew; and Owen, William John, 3,687,995.

Owens-Corning Fiberglas Corporation: *See—*
Cunningham, Cecil R.; and Rushton, James C., 3,687,381.

Owens-Illinois, Inc.: *See—*
Rummel, Frederick A.; and Shields, Richard J., 3,687,802.
Spanoudis, Louis, 3,687,799.

Ozasa, Teruaki: *See—*
Murakami, Masuo; Kawahara, Shigemi; Inukai, Noriyoshi; Ishida, Sanae; Imai, Kazuo; and Ozasa, Teruaki, 3,687,950.

Pacific Western Extruded Products, Inc.: *See—*
Longshaw, William J.; Sieson, Roy C., Jr.; and Ridenour, James, 3,687,167.

Packard Instrument Company, Inc.: *See—*
Packard, Lyle E., 3,688,120.

Packard, Lyle E., to Packard Instrument Company, Inc. Data processing system employing quench simulation for enabling accurate computation of sample activity levels in liquid scintillation spectrometry. 3,688,120, Cl. 250-106.0sc.

Padmanathan, Thurairajah, to American Cyanamid Company. Amine derivatives of 1,2-dihydrobenz[cd]indoles. 3,687,972, Cl. 260-326.300.

Pagel, Richard F.: *See—*
Carpenter, Robert K.; and Pagel, Richard F., 3,687,828.

Paige, Walter Griffin, to Burroughs Corporation. Low cost calculator providing serial printing and a bi-quinary system for amount entry. 3,687,361, Cl. 235-60.00p.

Painley, Elmer F., to Rockwell Manufacturing Company. One way drive for remote reader register. 3,688,091, Cl. 235-92.00h.

Palan, Sherman E. Pressurized dispensing package. 3,687,174, Cl. 141-20.000.

Palmer, Neil R.; Karge, Joseph R.; and Erickson, Kenneth W., to Square D Company. Actuating mechanism for operating handle of electrical switching device. 3,688,228, Cl. 335-68.000.

Palmer, Reed A., to Robertshaw Controls Company. Pneumatic harness plug assembly or the like. 3,687,009, Cl. 91-37.000.

Pampus, Gottfried: *See—*
Oberkirch, Wolfgang; Gunther, Peter; and Pampus, Gottfried, 3,687,921.

Panariti, Viktor Mitrushi. Combustion power engine. 3,687,117, Cl. 123-43.00a.

Pankratz, Harry A. Dental hammer. 3,686,756, Cl. 32-43.000.

Papav, Valery Georgievich: *See—*
Paton, Boris Evgenievich; Medovar, Boris Ezrailevich; Chekotilo, Leonty Vasilievich; Pavlov, Leonid Viktorovich; Ariamonov, Viktor Leonidovich; Borisovich, Kiev, Alexandr; Kamensky, Leonid Alexeevich; Ishunkin, Veniamin Alexandrovich; Belenky, Alexandr Mikailovich; Shevisov, Anatoly Ivanovich; Grinsnpon, Semen Yakovlevich; Sysenko, Anatoly Pavovich; Dubinsky, Rudolf Solomonovich; Papav, Valery Georgievich; and Toschev, Alexandr Mikhaivich, 3,687,188.

Parcells, Alan; and Dahlgren, Donald A., to Upjohn Company, The. Purification of lactogen. 3,687,833, Cl. 204-180.00g.

Parker, Eric G.; and Wolf, Charles C., to General Motors Corporation. Squeegee wiper for tailgate windows. 3,686,705, Cl. 15-250.010.

Parks, Keith W., to Aluminum Company of America. Preheating of dry aggregate for carbon electrodes. 3,687,431, Cl. 263-52.000.

Parrini, Paolo: *See—*
Credali, Lino; and Parrini, Paolo, 3,687,842.

Parry, John R., to Campbell Soup Company. Farm machine for removing protective ground covers from a cultivated field. 3,687,392, Cl. 242-86.50r.

Paterson, Archibald, to British Railways Board. Railway track. 3,687,366, Cl. 238-105.000.

Paton, Boris Evgenievich; Medovar, Boris Ezrailevich; Chekotilo, Leonty Vasilievich; Pavlov, Leonid Viktorovich; Ariamonov, Viktor Leonidovich; Borisovich, Kiev, Alexandr; Kamensky, Leonid Alexeevich; Ishunkin, Veniamin Alexandrovich; Belenky, Alexandr Mikailovich; Shevisov, Anatoly Ivanovich; Grinsnpon, Semen Yakovlevich; Sysenko, Anatoly Pavovich; Dubinsky, Rudolf Solomonovich; Papav, Valery Georgievich; and Toschev, Alexandr Mikhaivich. Method and device for producing metal hollow ingots by electroslag rmelting. 3,687,188, Cl. 164-52.000.

Paton, Hamilton Neil King. Leox car full-side closure. 3,687,186, Cl. 160-188.000.

Patrick, Alan E.; and Kern, Kenneth E., to General Time Corporation. Radio clock mechanism having drowse feature. 3,686,878, Cl. 58-21.155.

Pavlov, Leonid Viktorovich: *See—*
Paton, Boris Evgenievich; Medovar, Boris Ezrailevich; Chekotilo, Leonty Vasilievich; Pavlov, Leonid Viktorovich; Ariamonov, Viktor Leonidovich; Borisovich, Kiev, Alexandr; Kamensky, Leonid Alexeevich; Ishunkin, Veniamin Alexandrovich; Belenky, Alexandr Mikailovich; Shevisov, Anatoly Ivanovich; Grinsnpon, Semen Yakovlevich; Sysenko, Anatoly Pavovich; Dubinsky, Rudolf Solomonovich; Papav, Valery Georgievich; and Toschev, Alexandr Mikhaivich, 3,687,188.

Pawlak, Daniel E.: *See—*
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Paxton, Douglas Ray. Variable dwell cam advance mechanism. 3,687,010, Cl. 91-262.000.

Pearlstein, Fred; and D'Ambrosio, Margaret R., to United States of America, Army. Heat resistant chromate conversion coatings. 3,687,740, Cl. 148-6.200.

Peck, Arland A.: *See—*
Folden, Denver C.; and Peck, Arland A., 3,687,779.

Pedersen, Charles John, to Du Pont de Nemours, E. I., and Company. Polyether compounds. 3,687,978, Cl. 260-340.300.

Pee-Wee Maschinen und Apparatebau Werner Plagemann: *See—*
Plagemann, Jurgen; and Conrad, Horst, 3,686,911.

Peeso, James Bruce, Jr.: *See—*

Murfitt, Donald; and Peeso, James Bruce, Jr., 3,687,413.
Pelam Inc.: *See—*
McCormick, James B., 3,687,130.
Pelletier, Robert A., to Mechtron International Corporation. Self-propelled conveyor apparatus. 3,687,276, Cl. 198-233.000.
Penetred Corporation: *See—*
Felker, Paul J., 3,687,583.
Perego, Guiseppe. Molding apparatus having ejector pins with oriented shaping surfaces for product removal. 3,687,591, Cl. 425-249.000.
Perlman, Sol J., to Vac Pac Manufacturing Company, Inc. Process for packaging articles. 3,686,823, Cl. 53-22.00b.
Perrault, Delphus Eugene; and Schopp, Frederick Ralph, to Web Press Corporation. Variable-drive hydraulic transmission for the fountain and ductor roll assemblies of an offset printing press. 3,686,863, Cl. 60-54.50r.
Perren, Stephan: *See—*
Fleisch, Alfred; and Perren, Stephan, 3,686,925.
Perrino, Albert C.; and Israel, Michael G. Polyureas obtained by reacting tolylene diisocyanate with a β, β-bis(alkylamino) diethyl sulfone. 3,687,902, Cl. 260-77.5ch.
Perry, Ralph S., to Texas Instruments, Incorporated. Computer memory system. 3,688,287, Cl. 340-174.10e.
Personick, Stewart David: *See—*
Miller, Stewart Edward; and Personick, Stewart David, 3,687,514.
Peters, Eugene R.: *See—*
Witte, Robert S.; Frantz, Lee M.; and Peters, Eugene R., 3,688,217.
Petersen, Jorgen Hartvig; and Madsen, Ingvard Mosby, to Danfoss A/S. Pressure-regulating and cut-off valve for fuel-oil pumps. 3,687,154, Cl. 137-116.000.
Petri, William Edward, Jr.; and Froese, Richard Joseph, to Cincinnati Gilbert Machine Tool Company, The. Index table control. 3,686,979, Cl. 74-813.00c.
Pettit, George R.; Houghton, Leonard E.; Knight, John C.; and Bruschweiler, Fred. Process for the preparation of bufalin and related compounds. 3,687,944, Cl. 260-239.570.
Petty, William F., to Robbins, Robert G. Valve assembly. 3,687,414, Cl. 251-77.000.
Pezzoli, Silvestro: *See—*
Vargiu, Silvio; Giovanni, Sesto S.; Nistri, Ugo; and Pezzoli, Silvestro, 3,687,896.
Pfeiffer, John D., to Beloit Corporation. Measuring and controlling wound-in tension for web-winding machines. 3,687,388, Cl. 242-65.000.
Pfister, Franz; Albrecht, Ernst; Durner, Josef; and Maus, Eicke, to Messerschmitt-Bolkow-Blohm Gesellschaft mit beschrankter Haftung. Elevation gear for a firing device for jet-propelled guided missiles. 3,687,005, Cl. 89-41.00r.
Philadelphia Quartz Company: *See—*
Sams, Robert H.; Linton, Robert W.; and Weldes, Helmut H., 3,687,640.
Philip, Derek A. Method of coating particles by rotating a fluidized bed of the particles. 3,687,717, Cl. 117-100.00a.
Philippi, Eugene O. Hydraulic limited slip and stabilizing differential gearing unit. 3,686,976, Cl. 74-711.000.
Philips Petroleum Company: *See—*
Gilbert, Dixie E., 3,687,593.
Phillips, Lester F.: *See—*
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Phillips Petroleum Company: *See—*
Bowman, Edward L., 3,687,880.
Crouch, Willie W.; and Moberly, Charles W., 3,687,907.
Favre, John A., 3,686,923.
Mueller, Francis X., Jr.; and Brown, James D., 3,687,916.
Pitzer, Emory W., 3,687,868.
Phillips, Phillip. Writing implement. 3,687,561, Cl. 401-134.000.
Physical Electronics Industries, Inc.: *See—*
Ballou, Richard P., 3,688,173.
Picard, Salvatore A.: *See—*
Naubereit, Henry; and Picard, Salvatore A., 3,688,202.
Picklesimer, Lewellyn G., to United States of America, Air Force. Polymers containing nitrile and thioamide groups and their preparation. 3,687,908, Cl. 260-79.5nv.
Pierre, Joseph Pingon. Tower crane with telescopic jib. 3,687,323, Cl. 212-56.000.
Piette, Leonard A., to Taco, Inc. Vent for fluid flow metering device. 3,686,945, Cl. 73-208.000.
Pilkington Brothers Limited: *See—*
Oulton, Richard John, 3,687,648.
Pines, Seemon H. 5-Halo-bicyclo [2,2,2,] oct-2-eve-1.4 dicarboxylic acid. 3,688,005, Cl. 260-468.00b.
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Sugiyama, Keiji, 3,686,751.
Yoshifumi, Saeki; and Seiichiro, Kurihara, 3,688,199.
Pirker, Hans: *See—*
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Pirot, Ernst: *See—*
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Pitkjaan, Elam, to Westinghouse Electric Corporation. Vehicle headlamp having a dual-segment reflector. 3,688,149, Cl. 313-114.000.
Pittet, Alan O.; and Seitz, Eugene W., to International Flavors & Fragrances Inc. Flavoring compositions and processes. 3,687,692, Cl. 99-140.00r.
Pitzer, Emory W., to Phillips Petroleum Company. Impregnation with tin for strong oxidative dehydrogenation catalysts. 3,687,868, Cl. 252-435.000.
Plagemann, Jurgen; and Conrad, Horst, to Pee-Wee Maschinen und Apparatebau Werner Plagemann. Method of an apparatus for semi-hot forming of metallic workpieces in a rolling operation. 3,686,911, Cl. 72-69.000.
Plasser, Franz; and Theurer, Josef. Method of continuously correcting a track position. 3,687,081, Cl. 104-12.000.
Platt, John Robert: *See—*
Kawecher, Ralph William; and Platt, John Robert, 3,687,351.
Plattner, Robert F.; Weller, Frank C.; and Staron, Edward, to Interlake, Inc. Strapping machine. 3,687,059, Cl. 100-4.000.
Plessey Telecommunications Research Limited: *See—*
Clark, Adrian Percy, 3,688,048.
Plostnieks, Janis, to McNeil Laboratories, Inc. Aralkyl penta- and hexamethylenimine and intermediates therefor. 3,687,958, Cl. 260-293.720.
Plotnikoff, Nicholas Peter: *See—*
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Bernstein, Edith; Garmaise, David Lyon; and Plotnikoff, Nicholas Peter, 3,687,961.
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Podebradsky, Everett V. Method of preparing fresh pork sausage having improved color. 3,687,689, Cl. 99-109.000.
Pofferi, Giancarlo, to Ital-Bed Costruzione Letti e Affini S.r.l. Assemblies for mounting panels on walls. 3,686,805, Cl. 52-64.000.
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Polaroid Corporation: *See—*
Baker, Philip G.; Cook, Gerald H.; and Downey, Rogers B., 3,687,051.
Bloom, Stanley Morton, 3,687,862.
Erlichman, Irving, 3,687,032.
Gondolfe, James D.; Scalan, Ruth; and Ward, Jeanne A., 3,687,660.
Johnson, Bruce K., 3,687,034.
Norris, Philip R., 3,687,041.
Polonyi, Joseph. Modular space toy. 3,686,789, Cl. 46-43.000.
Pommerening, Owe A., to Stromberg-Carlson Corporation. Frequency discriminator circuit for selecting one of two clock signals. 3,688,201, Cl. 328-133.000.
Ponsa, Carlos Sauret. Process to make cock and specifically water faucets. 3,686,733, Cl. 29-157.10r.
Poore, Ernest C.: *See—*
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Porrmann, Herbert: *See—*
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Porsche, Dr.-Ing. H.c.F., K.G., Firma: *See—*
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Porter, John H.; and Murray, David B., to Ladd Research Industries, Inc. Fiber optic pressure detector. 3,686,958, Cl. 73-406.000.
Porter, Kenneth E.; Ellis, Stephen R. M.; Ashton, Neil; and Hands, Clifford H. G., to Albright & Wilson Limited. Distillation apparatus. 3,687,818, Cl. 202-158.000.
Posselt, Klaus: *See—*
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Potlatch Forests, Inc.: *See—*
Willows, James D., 3,687,260.
Potter, Gene Barrack; and Reeder, Ronald Holt, to Xerox Data Systems, Inc. Digital circuit logic. 3,688,127, Cl. 307-207.000.
Powell, Eugene L.: *See—*
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Powsey, Eric, to Linread Limited. Method of setting tubular fasteners. 3,686,914, Cl. 72-114.000.
PPG Industries, Inc.: *See—*
Drummond, Warren W., 3,686,772.
Pratt, Ronald George; Willis, William; and Singleton, John Stephenson, to U.S. Philips Corporation. Electromechanical filters comprising input-output interdigital electrodes having differing amplitude and frequency characteristics. 3,688,223, Cl. 333-72.00.
Precision-Cincinnati, Inc.: *See—*
Williams, Earl J.; and McLain, James E., 3,686,741.
Presti, Charles Lo, to Carborundum Company, The. Belt grinding machines and platen therefor. 3,686,798, Cl. 51-138.000.
Preston, Birgit 1/3 to Prother, Charles V.: *See—*
Tracy, Richard A., 3,687,216.
Preston, Jack: *See—*
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Li, Hsin Lang; Lamb, George Edwin Robert; and Prevorsek, Dusan Ciril, 3,686,722.
Prew, Stanley R.; and Clark, Llewelyn E., to Beloit Corporation. Noise suppressing baffle discharge exit. 3,687,360, Cl. 233-46.000.

Price, Harold J.; and Snyder, Robert M., to Oceanography Development Corporation. Navigation system. 3,687,556, Cl. 356-152.000.
Priest, Wayne A.; and Weigand, Arthur D., to Dutton-Lainson Company. Transmission and coil brake for winches. 3,687,249, Cl. 192-4.00r.
Priet, Roger Alois: *See—*
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Procter & Gamble Company, The: *See—*
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Liepa, Alexander L., 3,687,687.
Proctor, Edward D., to Bowles Fluidics Corporation. Protective sheath for fluid transfer. 3,687,173, Cl. 141-1.000.
Proctor, Wayne R., Jr., to McLaughlin Research Corporation. Exercising and training type golf club. 3,687,458, Cl. 273-183.00d.
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Produits Chimiques: *See—*
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Produits Chimiques Pechiney: *See—*
Thomas, Jean Claude, 3,687,919.
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Rentschler, Waldemar T., 3,687,028.
Rentschler, Waldemar T., 3,687,045.
Properzi, Ilario. Method of regulating the supply of molten metal to a casting cavity. 3,687,190, Cl. 164-87.000.
Propst, James P.: *See—*
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Pross, Geb. Hogreve, Erna Morbor. Frame for taking bite impressions. 3,686,759, Cl. 32-17.000.
Prosser, Robert M.; and Thomas, Nelson A., to Du Pont de Nemours, E. I., and Company. Granulating tacky elastomeric materials. 3,687,699, Cl. 117-4.000.
Prot, Marcel, to Mead-Emballage. Packaging device for displaying and transporting containers. 3,687,281, Cl. 206-65.00r.
Protsyshin, Boris Nikolaevich: *See—*
Dyskin, Ernest Matveevich; Raevsky, Georgy Vladimirovich; Biletsky, Semen Mikhailovich; Burmenko, Eduard Jurievich; Grosman, Erikh Ruvimovich; Satanovsky, Abram Lazarevich; Kremnev, Oleg Alexandrovich; Zhuravlenko, Viktor Yakovlevich; and Protsyshin, BorisNikolaevich, 3,687,434.
Protzman, Thomas F., to Staley, A. E., Manufacturing Company. Cellophane laminated utilized as dye imbibition receiving layer. 3,687,666, Cl. 96-48.00r.
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Pyrofilm Corporation: *See—*
Brady, Hugh B.; Kochis, John L.; and Tischler, Oscar, 3,688,238.
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Raago, Rein, to Wagner Electric Corporation. Fluorescent symbol display tube having plural cathodes and/or vacuum anode insulation. 3,688,147, Cl. 313-108.00r.
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Racz, Nick S. Cook ware container cover. 3,687,331, Cl. 220-92.000.
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Ramanathan, Visvanathan; and Liechti, Hans Wilhelm, to Ciba Geigy Corporation. Basic dyestuffs containing a quaternized pyridine or quinoline radical. 3,687,929, Cl. 260-156.000.
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Ramsey, James E., Jr., to Westinghouse Electric Corporation. Multi-element induction device having common armature and power-factor adjusters. 3,688,192, Cl. 324-137.000.
Randolph, Arthur J.: *See—*
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Randolph, George J. J., Jr. Method of joining deformation-sensitive elements to deformable member. 3,687,755, Cl. 156-89.000.
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Ransom, Arthur Charles, to Marley Wollongong Limited. Unstacking machine. 3,687,306, Cl. 214-8.50c.
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Rasch, Eugen, to Erdolchemie Gesellschaft mit beschrankter Haftungs. Arrangement for coding given pathlengths in outgoing electrical sinnals. 3,688,304, Cl. 340-347.00p.
Rasmussen, Ole-Bendt; Madsen, Willy Buch; and Nielsen, Arne E. Apparatus for the rolling or twisting of yarn or ribbon-like structures about their longitudinal axis. 3,686,853, Cl. 57-77.420.
Rathi, Ram N.: *See—*
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Rauschelbach, Paul A., to Sperry Rand Corporation. Autopilot pitch attitude control. 3,688,175, Cl. 318-580.000.
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Ray, Glenn E., to American Olean Tile Company, Inc., mesne. Trowel for both applying coating material and removing the excess material. 3,686,703, Cl. 15-235.400.
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Redford, David Arthur, to Canadian Fina Oil Limited. Method for extracting bitumen from tar sands. 3,687,197, Cl. 166-272.000.
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Reinhall, Rolf Bertil. Method for producing a moldable pulp composition for making shaped articles. 3,687,749, Cl. 156-62.400.
Reinhart, Theodore J., Jr., to United States of America, Air Force. Thermoplastic release coating. 3,687,701, Cl. 117-6.000.
Reinkemeyer, Heinz-Gerd. Process and apparatus for manufacturing high-frequency welded upholstery articles. 3,687,766, Cl. 156-209.000.
Reisman, Abraham J.; and Wilkinson, Thomas B., III, to Alton Box Board Company and Monsanto Company. Scoring process for certain rigid-when-wet corrugated fiberboard. 3,687,767, Cl. 156-210.000.
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Remick, Karl F., to Cities Service Oil Company. Tobacco curing apparatus. 3,687,428, Cl. 263-19.00d.
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Rentschler, Waldemar T., to Prontor-Werk Alfred Gauthier, G.m.b.H. Camera shutter mechanism. 3,687,045, Cl. 95-59.000.
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Reynard, Remi, to Institut Francais du Petrole, des Carburants et Lubrifiants. Flexible pipe for conveying fluids, particularly hydrocarbons. 3,687,169, Cl. 138-134.000.

Reynolds, Verne J. Surface conforming disposable surgical preparation applicator. 3,687,140, Cl. 128-269.000.

Rheinmetall G.m.b.H.: *See—*
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Rheude, Franz Gustav; Munster, Franz; and Brehmer, Harald, to Gebr. Giulini, GmbH. Process for making a material for shoe or boot manufacture. 3,687,714, Cl. 117-68.500.

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Riccio, Victor D. S. Remote controlled mirror. 3,687,525, Cl. 350-289.000.

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Richardson Company, The: *See—*
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Rickard, Donn J. Motorcycle suspension apparatus. 3,687,438, Cl. 267-64.000.

Rickard, Earl K., to Combustion Engineering, Inc. Method and apparatus for preparing an additive for introduction to a gas scrubber. 3,687,613, Cl. 423-242.000.

Riddle, John H.: *See—*
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Ries, Karl; Wimmer, Helmut; and Biller, Theodor. Method and an apparatus for examining the seams of welded pipes. 3,686,932, Cl. 73-67.50r.

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Rigips-Stempel GmbH & Co. KG: *See—*
Friedrich, Streck, 3,687,223.

Rillaers, Guy Alfred; Depoorter, Henri; and Moelants, Felix Jan, to Gevaert-Agfa N.V. Photographic element containing colored colloid layers. 3,687,670, Cl. 96-84.000.

Rink, Wilhelm: *See—*
Rink, Wilhelm; and Blecher, Alfred, 3,686,824.

Rink, Wilhelm; and Blecher, Alfred, to Rink, Wilhelm. Bottle handling apparatus. 3,686,824, Cl. 53-381.00a.

Riordan, Frank S., Jr., to Monsanto Company. Method of anchoring hair-like synthetic filaments to a wig base. 3,687,752, Cl. 156-72.000.

Riordan, Hugh E., to Kelsey-Hayes Company. Skid control system. 3,687,504, Cl. 303-21.00f.

Rippel, Robert; Dittmar, Walter; and Schorr, Manfred, to Farbwerke Hoechst Aktiengesellschaft. Throphene-3-isonitriles. 3,687,977, Cl. 260-332.20c.

Risk, Jerry A., to Texas Instruments, Incorporated. Electrical switch means for effecting sequential operation. 3,688,060, Cl. 200-67.000.

Ritter, Sammie F., to Mobil Oil Corporation. Apparatus for and method of controlling the firing of seismic sound sources. 3,687,218, Cl. 80-120.000.

Robbins, Clyde F., to Cutler-Hammer, Inc. Compression mounted SCR clamp with heat sink means. 3,688,159, Cl. 317-100.000.

Robbins, Robert G.: *See—*
Petty, William F., 3,687,414.

Robertshaw Controls Company: *See—*
Myers, Ned C., 3,688,064.
Myers, Neo, 3,687,290.
Palmer, Reed A., 3,687,009.

Robin, Harral T.: *See—*
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Rochat, Alain Claude: *See—*
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Rochell, David: *See—*
Saunders, Leonard Victor John; and Rochell, David, 3,686,826.

Rockwell Manufacturing Company: *See—*
Painley, Elmer F., 3,688,091.

Rod, Trygve R.; and Evans, Thomas S., to Xerox Corporation. Quick change labeling head. 3,687,347, Cl. 226-74.000.

Rogers, John E.: *See—*
James, Robert C.; Hart, Charles G.; Rogers, John E.; and Safranski, Richard W., 3,687,250.

Rogosch, John E.; and Williams, Floyd B., to Ethyl Corporation. Method for producing a multi-layer reinforced plastic sheet material. 3,687,764, Cl. 156-179.000.

Rohe Scientific Corporation: *See—*
Natelson, Samuel, 3,687,632.

Rohm and Haas Company: *See—*
Derby, Richard, 3,687,801.

Rohm, Robert F., to Threadline Fastener Corporation. Self-locking screw threaded fastener. 3,687,183, Cl. 151-22.000.

Rohr Corporation: *See—*
Kendall, Earl W., 3,687,741.

Rolamite, Incorporated: *See—*
Wilkes, Donald F., 3,686,965.
Wilkes, Donald F., 3,687,470.

Rolf, Stuttgart: *See—*
Strehler, Erich; Kaumle, Fritz; and Rolf, Stuttgart, 3,686,971.

Rollins, Dallas W.: *See—*
Yurkoski, Frank R.; Coyle, Edward L.; Needham, Robert F.; and Rollins, Dallas W., 3,687,087.

Root, George R., to Root Manufacturing Company, Inc. Riding lawn mower. 3,686,840, Cl. 56-15.800.

Root Manufacturing Company, Inc.: *See—*
Root, George R., 3,686,840.

Roots, Philip Stanley, to St. Bernard Plastics Limited. Insulating means suitable for use in handling high volatge power lines. 3,688,017, Cl. 174-46.000.

Roper, Ralph E., to Wallace Expanding Machines, Inc. Method and apparatus for processing coiled sheet metal. 3,686,921, Cl. 72-302.000.

Rosen, Henri Elliott. Shoe construction. 3,686,777, Cl. 36-2.50b.

Rosen, Karl Isac Joel. Thread delivery and storage device. 3,687,384, Cl. 242-47.120.

Rosenberger, Harold E.: *See—*
Nothnagle, Paul E.; and Rosenberger, Harold E., 3,687,520.

Rosenfeld, Howard; and Wetzler, Justin J., 1/2 to A-T-O Inc., 1/2 to American Liner Supply Co. and Linen Supply Association of America, The. Laundering system. 3,686,899, Cl. 68-3.00r.

Rosenfeld, Myer; and Nichols, Troy R., to United States of America, Army. Corrosion inhibited paint remover. 3,687,857, Cl. 252-109.000.

Rosenmund, Peter; and Grubel, Klaus, to Marcus, Friedrich-Karl. Method of making pyrrole derivatives. 3,687,962, Cl. 260-296.00r.

Rosin, Seymour, to Harris Intertype Corporation. Image spacing system. 3,687,025, Cl. 95-4.500.

Ross, Albert L. Bag making machine. 3,686,988, Cl. 83-300.000.

Ross, Sidney D.: *See—*
Morrison, Richard J.; and Ross, Sidney D., 3,687,718.

Ross, William C., to Grace, W. R., & Co. Guide for placing reinforced yarns in preformed grooves in rubber. 3,687,783, Cl. 156-436.000.

Rossmy, Gerd: *See—*
Koerner, Gotz; and Rossmy, Gerd, 3,687,642.

Rouse, Donald W., to Readex Electronics, Inc. Method and apparatus for transmitting utility meter data to a remote mobile command unit. 3,688,271, Cl. 340-172.500.

Routh, Larry L.; and Contratto, James, to U.S. Industries, Inc. End connector for a power distribution system. 3,688,240, Cl. 339-21.00r.

Routson, Willis G. Method for controlling flow of aqueous fluids in subterranean formations. 3,687,200, Cl. 166-275.000.

Rozkydalek, Jiri, to Separo Brno, inzenyrska Kancelar. Apparatus for sedimentation of solid impurities from liquids. 3,687,298, Cl. 210-519.000.

Rozwadowski, Witold; and Szymanski, Aleksander, to Glowne Biuro Studiow i Projektow Zaplecza Technicznego Motoryzacji Warsvawa. Hydraulic servomotor with air motor. 3,686,856, Cl. 60-600.000.

Rubio, Manuel Jesus, to Gonzalez, Roberts Barrera. Tortilla and process using phosphorus oxychloride. 3,687,685, Cl. 99-80.00r.

Rue, Charles V.; and Busch, John F., to International Telephone and Telegraph Corporation. Abrasive cutting-off wheels having metal coated sides. 3,686,800, Cl. 51-206.00r.

Ruff, Charles Ernest, to Standard Products Company, The. Decorative trim strip. 3,687,792, Cl. 161-4.000.

Rumberger, William E.: *See—*
Miller, Charles C.; and Rumberger, William E., 3,686,926.

Rummel, Frederick A.; and Shields, Richard J., to Owens-Illinois, Inc. Controlling the moisture, mullen and basis weight of paper. 3,687,802, Cl. 162-198.000.

Runton, Leslie A., to Industrial de Cascarillas-CISCANA S.A. Method of producing molded articles from coffee bean hulls. 3,687,877, Cl. 260-17.200.

Rupp, Hans-Dieter; Meyer, Gerhard; and Magerlein, Helmut. Process for reducing the thiourea content of alkali- and alkaline earth-metal rhodanides. 3,687,617, Cl. 423-178.0on.

Rusaev, Vladimir Ivanovich: *See—*
Sokolov, Evgeny Vyacheslavovich; Yashkin, Eduard Petrovich; Sysoev, Vadim Ivanovich; Kozhevnikov, Rady Savvich; Chabanov, Alim Ivanovich; Shinkarenko, Mikhail Ivanovich; Grinchuk, Petr Stepanovich; Fomin, Georgy Georgievich; and Rusaev, Vladimir Ivanovich, 3,686,907.

Rush, Richard W. Self-cleaning air scrubber. 3,686,833, Cl. 55-228.000.

Rushton, James C.: *See—*
Cunningham, Cecil R.; and Rushton, James C., 3,687,381.

Russell, Lewis Keith, to Signetics Corporation. Learning circuit. 3,688,276, Cl. 237/006/3/0/025.

Ruti Machinery Works, Ltd.; formerly Caspar Honegger: *See—*
Strauss, Edgar H., 3,687,171.

Rutter, Kenneth A. End fittings for flexible drive cables. 3,686,896, Cl. 64-4.000.

Ryan, John W.: *See—*
Handler, Elliot; Ryan, John W.; Lemkin, Jack L.; and Dunn, Ralph, 3,686,894.

S.A. Delalande: *See—*
Fauran, Claude P.; Gouret, Claude J.; Raynaud, Guy M.; and Douzon, Colette A., 3,687,965.

Sachs, Maxwell. Footwear. 3,686,779, Cl. 36-2.50w.

Sadee, Constant P. M.; and Koenders, Henricus A. A., to Stamicarbon N.V. Process of preparing synthesis gas. 3,687,866, Cl. 252-373.000.

Safranski, Richard W.: *See—*
James, Robert C.; Hart, Charles G.; Rogers, John E.; and Safranski, Richard W., 3,687,250.

Safstrom, Donald K.: *See—*
Erickson, Wallace A.; and Safstrom, Donald K., 3,686,782.

Saint-Gobain Techniques Nouvelles: *See—*
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Saito, Jiro: *See—*
Susuki, Rinnosuke; Hoshi, Hiroshi; Saito, Jiro; Murakami, Keiichi; and Hirakawa, Michio, 3,687,890.

Sakamoto Seiki Kabushiki Kaisha: *See—*
Sakamoto, Toshikazu; and Adachi, Michio, 3,687,495.

Sakamoto, Tetsuzo; Torii, Akiom; Yokota, Mituhisa; and Sato, Seiko, to Tokyo Shibaura Denki Kabushiki Kaisha, a/k/a Tokyo Shibaura Electric Co. Ltd. Steam turbine control devices. 3,688,095, Cl. 235-151.100.

Sakamoto, Toshikazu; and Adachi, Michio, to Matsushita Electric Industrial Co., Ltd., and and Sakamoto Seiki Kabushiki Kaisha. Pipe joint. 3,687,495, Cl. 285-356.000.

Sakamoto, Wayne Y.; Westphal, Stephen Roger; and Fletcher, Franklin I. Replaceable traffic barrier gate. 3,686,794, Cl. 49-141.000.

Salihi, Jalal I.; Brockman, John J.; and Spix, George J., to General Motors Corporation. Induction motor braking system. 3,688,171, Cl. 318-211.000.

Salmon, Jacques, to CSF-Compagnie Generale de Telegraphie San Fils. Parabolic antennas. 3,688,311, Cl. 343-755.000.

Salomon, Georges Pierre Joseph. Adjustment of ski bindings. 3,686,950, Cl. 73-379.00r.

Salverda, Robert E. Magnetic motors. 3,688,136, Cl. 310-24.000.

Samejima, Toshihide. Electronically controlled stop watch. 3,686,880, Cl. 58-39.500.

Samelson, Harold: *See—*
Kocher, Robert; Moore, Franklin; and Samelson, Harold, 3,688,216.

Sams, Robert H.; Linton, Robert W.; and Weldes, Helmut H., to Philadelphia Quartz Company. Agglomerating alkali metal silicate by tumbling and rolling while heating and cooling. 3,687,640, Cl. 23-313.000.

Sanchez, Francois; and Jutras, Matial, to Chemcell Limited. Tool for removing ring travellers. 3,686,736, Cl. 29-207.000.

Sandbach, Peter, to Moore Business Forms Inc. Containers for transfer material webs. 3,687,386, Cl. 242-55.000.

Sando Iron Works Company, Limited: *See—*
Sanso, Yoshikazu; and Takasu, Masao, 3,686,900.

Sandoz-Wander, Inc.: *See—*
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Sangamo Electric Company: *See—*
Wiley, John Robert; and Blase, Emil F., 3,688,162.

Sankyo Company Limited: *See—*
Iwai, Isseu; Kishida, Yukichi; Hiroaka, Tetsuo; and Nakamura, Norio, 3,687,968.

Sanso, Yoshikazu; and Takasu, Masao, to Sando Iron Works Company, Limited. Pressure sealing apparatus. 3,686,900, Cl. 68-5.00e.

Santilli, Vincent J.; Vine, James; and Cotterman, James W. Electrostatic focused electron image device. 3,688,122, Cl. 250-213.0vt.

Satanovsky, Abram Lazarevich: *See—*
Dyskin, Ernest Matveevich; Raevsky, Georgy Vladimirovich; Biletsky, Semen Mikhailovich; Burmenko, Eduard Jurievich; Grosman, Erikh Ruvimovich; Satanovsky, Abram Lazarevich; Kremnev, Oleg Alexandrovich; Zhuravlenko, Viktor Yakovlevich; and Protsyshin, BorisNikolaevich, 3,687,434.

Sato, Akiro; Sonoda, Minoru; Shiba, Keisuke; Hinata, Mansanao; and Nozoe, Tetsuo, to Fuji Photo Film Co., Ltd. Direct positive fogged silver halide emulsion sensitized with a cyclottatriene cyanine dye. 3,687,674, Cl. 96-101.000.

Sato, Fumio: *See—*
Hoshino, Yutaka; Iwaki, Yoshikazu; Matsukawa, Koshiro; Nakada, Akira; Sato, Fumio; and Uno, Kazuo, 3,687,913.

Sato, Fumitaka: *See—*
Matsushita, Shigenori; Sato, Fumitaka; and Chujo, Hisao, 3,688,299.

Sato, Ikuo: *See—*
Imamura, Makoto; and Sato, Ikuo, 3,688,308.

Sato, Kazuo, to Messrs Toyota Jidosha Kogyo Kabushiki Kaisha. Safety method and apparatus for vehicle passengers. 3,687,213, Cl. 180-82.000.

Sato, Masamichi; and Matsumoto, Sieji, to Xerox Corporation. Color electrophotographic process. 3,687,661, Cl. 96-1.200.

Sato, Seiko: *See—*
Sakamoto, Tetsuzo; Torii, Akiom; Yokota, Mituhisa; and Sato, Seiko, 3,688,095.

Sato, Sumihisa: *See—*
Suzuki, Ruuzo; Sato, Sumihisa; Okamoto, Shuji; Shinozaki, Akira; and Doi, Tatsumi, 3,687,542.

Satomura, Masato: *See—*
Hayakawa, Yoshihide; and Satomura, Masato, 3,687,667.

Saunders, Leonard Victor John; and Rochell, David, to Allied Chemical Corporation. Polymer finisher. 3,686,826, Cl. 55-52.000.

Sauvan, Jacques Louis; and Berthelemy, Jacques. Data processing apparatus. 3,688,278, Cl. 340-172.500.

Savage, W. J., Co., Inc.: *See—*
Densmore, Richard M., 3,687,008.

Savitsky, Evgeny Mikhailovich: *See—*
Stroganov, Genrikh Borisovich; Savitsky, Evgeny Mikhailovich; Tikhova, Nina Mikhailovna; Terekhova, Vera Fedorovna; Volkov, Mstislav Vasilievich; Sivash, Konstantin Mitrofanovich; and Borodkin, Vladislav Sergeevich, 3,687,135.

Savoca, Paul C.; and Marasco, Anthony D., to Nottingham, J. B., & Co., Inc. Replaceable intermediate socket and play member. 3,688,244, Cl. 339-6.000.

Savonkin, Nikolai Porfirievich: *See—*
Maslennikov, Konstantin Nikolaevich; Argunov, Jury Vasilievich; Savonkin, Nikolai Porfirievich; Smyvin, Rudolf Mikhailovich; and Chzhen, Igor Alexeevich, 3,688,141.

Sawazi, Masao: *See—*
Yamada, Keisho; Umemura, Sumio; Ohdan, Kyoji; Hidaka, Mikio; Fukuda, Kazuo; and Sawazi, Masao, 3,688,002.

Saxena, Arjun Nath, to RCA Corporation. Method of coating selective areas of the surface of a body. 3,687,722, Cl. 117-212.000.

Saxton, Arthur L.; and Jenkinson, Ronald J., to Esso Research and Engineering Company. Catalytic cracking process. 3,687,841, Cl. 208-164.000.

Say, Donald L.; and Smithgall, Harry E., to Sylvania Electric Products, Inc. Method of fabricating a multibeam electron gun structure. 3,686,727, Cl. 29-25.160.

Scalan, Ruth: *See—*
Gondolfe, James D.; Scalan, Ruth; and Ward, Jeanne A., 3,687,660.

Scanlon, Michael J., to Damon Corporation. Centrifuge rotor. 3,687,359, Cl. 233-26.000.

Schaefer, Edward J., to Franklin Electric Co.,Inc. Leakage control means for a submersible motor assembly. 3,688,140, Cl. 310-87.000.

Schaefer, Robert H., to General Motors Corporation. Power train control system. 3,687,210, Cl. 180-6.440.

Scharpf, Lewis G., Jr., to Monsanto Company. Germination of spores. 3,687,815, Cl. 195-96.000.

Scharton, Terry D., to Bolt Beranek and Newman Inc. Vibration testing method and apparatus. 3,686,927, Cl. 73-71.600.

Scheder, John R., to Purity Electrochemicals Company. Process for the treatment of liquid whey. 3,687,682, Cl. 99-57.000.

Scheer, Erich: *See—*
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Scheib, William R., to Aetva-Standard Engineering Company. Looper apparatus for strip material. 3,687,348, Cl. 226-113.000.

Scheiterlein, Andreas, to List, Hans. Internal combustion engine for oil testing. 3,687,231, Cl. 184-6.500.

Scheppers, Arthur, to Johns-Manville Corporation. Decorative cementitious panel and method of manufacture. 3,687,800, Cl. 161-162.000.

Scherer, Lorenz: *See—*
Eggemmuller, Alfred; Scherer, Lorenz; Notter, Eugen; Bellan, Heinrich; and Wagler, Werner, 3,687,061.

Scheuer, Nicholas G.: *See—*
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Scheweinfurth, Hans; and Lambach, Rolf, to Friedrich Uhde GmbH. Device for mixing granular and/or pulverized bulk material. 3,687,420, Cl. 259-2.000.

Schillerstrable, Friedhelm Mundus, to Windmoller & Holscher. Apparatus for stacking thermoplastic bags. 3,687,447, Cl. 271-79.000.

Schjeldahl, G. T., Company: *See—*
Adams, Richard Calvin, 3,687,389.

Schlegel, Franz; and Graf, Josef, to Optische Werke G. Rodenstock. Fight-lens apochromatic objective. 3,687,523, Cl. 350-220.000.

Schlichte, Max, to Siemens Aktiengesellschaft. PCM time division multiplex process. 3,688,049, Cl. 179-15.0aq.

Schlor, Egon; and Duchrau, Herbert, to Daimler-Benz Aktiengesellschaft. Safety installation at a motor vehicle tank. 3,687,159, Cl. 137-563.000.

Schlumberger Technology Corporation: *See—*
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Mullins, Albert A., 3,687,196.

Schmeisser, Manfred H.: *See—*
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Schmidt, Paul R.: *See—*
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Schmitt, Arthur N., 10% to Breston, Michael P. Hybrid power regulator comprising rheostat and diode. 3,688,183, Cl. 323-80.000.
Schneeberger Kork AG: *See—*
Schneeberger, Victor; and Braunschweig, Robert G., 3,687,143.
Schneeberger, Victor; and Braunschweig, Robert G., to Schneeberger Kork AG. Pressure bandage and a method for producing the pressure bandage. 3,687,143, Cl. 128-402.000.
Schneider, John M.; and Lennon, John, to Xerox Corporation. Electrostatographic charging apparatus. 3,688,107, Cl. 256/036/2/0/025.
Schneider, William A.: *See—*
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Schnell, Georg: *See—*
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Schnell, Georg; Woellhaf, Josef; Richter, Volker; Schuhmacher, Gerd; and Sobotta, Erich Albert. Magnetic disc pack and arrangement for aerating the same. 3,688,289, Cl. 340-174.10e.
Schnell, Hermann: *See—*
Vernaleken, Hugo; Malamet, Georg; Bottenbruch, Ludwig; Krimm, Heinrich; and Schnell, Hermann, 3,687,895.
Schoen, William: *See—*
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Scholes, Addison B., to Ball Brothers Company Incorporated. Ignition flash control means for bottle treatment. 3,687,651, Cl. 65-161.000.
Scholl, Gunter. Ribbed pipe unit. 3,687,194, Cl. 165-180.000.
Scholl, Richard: *See—*
Wisseroth, Karl; Trieschmann, Hans-Georg; Dodel, Peter; Hoehr, Lothar; Herbeck, Rudolf; and Scholl, Richard, 3,687,917.
Scholler, Gerhard; Baschant, Robert; and Hausler, Alfred, to Orenstein & Koppel Aktiengesellschaft. Ship elevator with baffle plate. 3,686,871, Cl. 61-9.000.
Scholmeyer, William A. Spring type resistance exercising device. 3,687,450, Cl. 272-83.00r.
Schonberg, Erik, to AB Gustavsbergs Fabriken. Room wall building element including a door-frame. 3,687,052, Cl. 98-32.000.
Schone, Helmut; Henkenhae, Horst; Vetter, Lothar; and Krause, Horst, to Veb Polygraph Leipzig, Kombinat fur Polygraphische Machinen und Ausrustungen. Humidity regulating system for printing machine. 3,686,771, Cl. 34-44.000.
Schopp, Frederick Ralph: *See—*
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Schott, Herbert; Herwig, Walter; and Sommer, Siegfried, to Farbwerke Hoechst Aktiengesellschaft vormals Meister Lucius & Bruning. Precipitation polymerization of α-methylstyrene. 3,687,924, Cl. 260-93.50s.
Schott, Stuart: *See—*
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Schrader, Carlton F.; Taylor, Harold L.; and Heitmann, William E., to Inland Steel Company. Quench system. 3,687,145, Cl. 134-114.000.
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Forste, Walter; Teuschler, Hans-Joachim; and Schreiber, Joachim, 3,688,142.
Schreiner, Paul. Material cooler. 3,686,773, Cl. 34-203.000.
Schrenk, Walter J., to Dow Chemical Company, The. Apparatus for the controlled extrusion of multi-component synthetic resinous bodies. 3,687,589, Cl. 18-13.00p.
Schroder, Arthur H.: *See—*
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Schubart, Rudiger: *See—*
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Schulz, George H.: *See—*
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Schulz, Hans-Peter; and Mandel, Jorn, to Rheinstahl Huttenwerke AG. Method of and apparatus for desulfurizing pig iron. 3,687,430, Cl. 266-34.00a.
Schundehutte, Karl-Heinz; and Trautner, Kersten. Dyestuffs and processes for their production and use. 3,687,964, Cl. 260-303.000.
Schurch, Eugene; and Storrer, Rolf, to Von Roll AG. Rail connection for overhead conveyors. 3,687,367, Cl. 238-151.000.
Schwarz, Herbert: *See—*
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Schwarzmann, Matthias: *See—*
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Schweigert, Luitpold, to Bruno Vogel. Apparatus for comminuting refuse. 3,687,378, Cl. 241-142.000.
Schweizer, Max Norman. Shaft bearing assembly having interchangeable parts. 3,687,509, Cl. 308-72.000.
Schwieter, Ulrich: *See—*
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SCM Corporation: *See—*
Miller, George J., 3,687,708.
Scollins, John A., to United States of America, Army. Sectioned obturating ring. 3,687,079, Cl. 102-49.200.
Scott Research Laboratories, Inc.: *See—*
Zegel, William C., 3,687,631.
Scott Thrissell Engineering Limited: *See—*
Pym, Michael Aren, 3,687,072.
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Seebury Corporation: *See—*
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Seiber, James N., to Dow Chemical Company, The. Electrolytic reduction of polyhaloquinoline and polyhaloisoquinoline. 3,687,826, Cl. 204-73.00r.
Seiber, James N., to Dow Chemical Company, The. Electrolytic reduction of halogenated halomethylpyridine compounds. 3,687,827, Cl. 204-73.00r.
Seidel, Joseph: *See—*
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Seifried, Paul, to Rheinmetall G.m.b.H. Rifle charging mechanism. 3,686,998, Cl. 89-1.00k.
Seiichiro, Kurihara: *See—*
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Seitel, Heinz. Collapsible umbrella with automatic and manual donerib locking means. 3,687,146, Cl. 135-26.000.
Seitz, Eugene W.: *See—*
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Seitzer, Walter H., to Sun Oil Company. Coal dissolution process. 3,687,838, Cl. 208-10.000.
Self, Aaron C.; and Larkins, James J. Audio frequency receiver. 3,688,052, Cl. 179-82.000.
Sellstrom Manufacturing Company: *See—*
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Sencore, Inc.: *See—*
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Sepco: *See—*
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Service National dit: Gaz de France: *See—*
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Severance, William A. N., to Du Pont de Nemours, E. I., and Company. Photographic emulsion silver gage. 3,688,110, Cl. 250-51.500.
Shankland, James F. Collapsible deer drag. 3,686,710, Cl. 16-112.000.
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Sharpe, John William; and Baker, Alfred Dickens. Lamp assemblies for road vehicles. 3,686,704, Cl. 15-250.010.
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Silvius, Arthur Aurelius Xaverius. Connecting construction for sheet members. 3,687,500, Cl. 287-189.36d.

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Simmler, Walter; and Steinbach, Hans-Horst, to Farbenfabriken Bayer Aktiengesellschaft. Permanent hair waving by artificially shaping with an epoxy-organo-silane. 3,687,606, Cl. 8-127.510.

Simons, Ira W., to Buckeye Stamping Company, The. Instrument case of assembled modular elements. 3,687,325, Cl. 220-4.00r.

Simpkin, Lawrence J.; and Srodawa, Richard M., to Detroit Edison Company, The. Structure for continuous monitoring of shaft vibration magnitude and phase angle. 3,686,956, Cl. 73-462.000.

Singer, Isadore, to Singer Safety Products, Inc. Fire fighting apparatus. 3,687,185, Cl. 160-1.000.

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Skalleberg, Oystein Gunnar, to MeKanomatik AB. Winding device for a cable, rope or the like. 3,687,385, Cl. 242-54.00r.

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Smith, Derek Anthony: *See—*
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Smith, Dexter William; and Williams, Alan. Rolls for use in manufacture of battery. 3,686,916, Cl. 72-198.000.

Smith, George Paul: *See—*
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Smith, H. Morton: *See—*
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Smith, Harold Eugene, to Smithpac Canada Ltd. Plunger shield for refuse vehicle loading chamber. 3,687,313, Cl. 214-83.300.

Smith, Harry J. Work enclosure for welding of aluminum tubing or the like. 3,688,070, Cl. 219-60.00a.

Smith, Joseph E., to Wolverine-Pentronix, Inc. Lubricated die and punch assembly for compacting power material. 3,687,588, Cl. 18-16.500.

Smith, Joseph F. Method and apparatus for treating thermoplastic yarns. 3,686,846, Cl. 57-34.0hs.

Smith, William D., to Go International Inc. Measuring apparatus for attaching to a conduit in a borehole. 3,686,943, Cl. 73-151.000.

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Societe d'Aerodynamique et de Thermodynamique Francaise en abrege S.O.F.R.A.I.R.: *See—*
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Sokolov, Anatoly Danilovich; Danilkin, Nikolai Nikiforovich; and Kanavets, Ivan Fedorovich. Material tester. 3,686,933, Cl. 73-101.000.
Sokolov, Evgeny Vyacheslavovich; Yashkin, Eduard Petrovich; Sysoev, Vadim Ivanovich; Kozhevnikov, Rady Savvich; Chabanov, Alim Ivanovich; Shinkarenko, Mikhail Ivanovich; Grinchuk, Petr Stepanovich; Fomin, Georgy Georgievich; and Rusaev, Vladimir Ivanovich.Device for automatic thickness control of rolled strips. 3,686,907, Cl. 72-6.000.
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Sommer, Warren T. Speed reducer and motion translator. 3,686,962, Cl. 74-25.000.
Son, Marion O., Jr.; and Tosca, William C. Micellar solutions of desired viscosity oil recovery process using. 3,687,201, Cl. 166-275.000.
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Spade, Robert L., to Belden Corporation. Coaxial cable. 3,688,016, Cl. 174-36.000.
Spanoudis, Louis, to Owens-Illinois, Inc. Glass lasers of increased heat dissipation capability made by ion exchange treatment of the laser glass. 3,687,799, Cl. 161-164.000.
Spauschus, Karl; and Darmawan, Brotoharsojo, to Werkzeugmaschinenfabrik Adolf Waldrich Coburg. Device for infinitely variable adjustment of the play of an antifriction bearing for a spindle or the like. 3,687,511, Cl. 308-207.000.
Spears, Joseph F. Motor protection control apparatus. 3,688,157, Cl. 317-13.00r.
Speich, Pier Gianni. Clear viewing screens. 3,688,081, Cl. 219-203.000.
Spenade, Lawrence: *See—*
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Spence, John; Gilman, Paul Brewster, Jr.; and Ulbing, Cynthia Geer. Desensitizers in unfogged silver halide systems. 3,687,676, Cl. 96-108.000.
Spencer, Donald J.; Mirels, Harold; Jacobs, Theodore A.; and Gross, Rolf W. F., to United States of America, Air Force. Continuous-wave chemical laser. 3,688,2[illegible], Cl. 331-94.500.
Spencer, William L.; and Juenger, Richard D., to Curlee Clothing Company. Garment package. 3,687,277, Cl. 206-7.000.
Sperry, Charles R., to Instapak Corporation. Liquid mixing and dispensing apparatus. 3,687,370, Cl. 239-112.000.
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Stanley, Richard C.; Thatcher, Charles R.; and Poore, Ernest C., to Midwestern Specialties, Limited. Method for coating pipe. 3,687,706, Cl. 117-18.000.
Stanley, Thomas R.; and Mascia, Carment T., to Continental Can Company, Inc. Metering dispensing closure. 3,687,341, Cl. 222-455.000.
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Stapley, Rulon Floyd; and Hollibaugh, Clarence T. Method of making potato products. 3,687,688, Cl. 99-100.00p.
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Stengelin, John Conrad. Tank for the purification of waste water. 3,687,299, Cl. 210-523.000.
Stenger, August M. Oil distribution system. 3,687,232, Cl. 184-6.800.
Stepmann, Walter, Sr., to Stahl-Armaturesas Persta GmbH KG. Valve construction. 3,686,969, Cl. 74-424.8va.
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Stieren, Arthur J. Apparatus for transferring piled silage. 3,687,322, Cl. 214-520.000.
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Stone, Orison W. End structure for shadow box display carton. 3,687,279, Cl. 206-45.140.
Storchheim, Samuel. Air sintering of aluminum powder compacts. 3,687,657, Cl. 75-212.000.
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Strange, John P.; Nebash, Stanley P.; McInnes, Alexander C.; and McConnaughey, Paul W., to Mine Safety Appliances Company. Filter cassette with removable capsule. 3,686,835, Cl. 55-270.000.
Stranger-Johannessen, Per, to A/S Norcem. Method for extracting D-xylose from xylan containing material. 3,687,807, Cl. 195-11.00.
Strangfeld, Reiner, to Herzog, August, Maschinenfabrik. Bobbin for braiding machines. 3,686,997, Cl. 87-57.000.
Strauss, Edgar H., to Ruti Machinery Works, Ltd.; formerly Caspar Honegger. Drive shaft for a wave-type loom. 3,687,171, Cl. 139-12.000.
Strehler, Erich; Kaumle, Fritz; and Rolf, Stuttgart, to Porsche, Dr.-Ing. H.c.F., K.G., Firma. Compound crankshaft with a drive-gear wheel for multi-cylinder piston engines, especially internal combustion engines. 3,686,971, Cl. 74-597.000.
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Stroganov, Genrikh Borisovich; Savitsky, Evgeny Mikhailovich; Tikhova, Nina Mikhailovna; Terekhova, Vera Fedorovna; Volkov, Mstislav Vasilievich; Sivash, Konstantin Mitrofanovich; and Borodkin, Vladislav Sergeevich. Magnesium-base alloy for use in bone surery. 3,687,135, Cl. 128-92.00b.
Stromberg-Carlson Corporation: *See—*
Goetchius, Norman E.; and Zaky, Amin Y., 3,688,050.
Hugyecz, Matyas; and Richmond, Carroll S., 3,688,038.
Pommerening, Owe A., 3,688,201.
Struble, Arthur D., Jr. Ski concept. 3,687,472, Cl. 280-11.37b.
Structural Fibers, Inc.: *See—*
Wiltshire, Arthur J., 3,687,587.
Stubbs, Robert C.: *See—*
Kniebes, Duane V.; Chisholm, John Adrian; and Stubbs, Robert C., 3,686,930.
Stuhldreher, Paul R.: *See—*
Appleby, Paul E.; Folden, Denver C.; and Stuhldreher, Paul R., 3,687,756.
Stumpf, Robert J., to Kimberly-Clark Corporation. Method of manufacturing an elastic nonwoven fabric. 3,687,754, Cl. 156-72.000.
Stumpf, Robert J.; and Mattes, William J., to Kimberly-Clark Corporation. Composite high-loft material for blankets. 3,687,796, Cl. 161-67.000.
Subbaratnam, Anangur V.; and Powell, Eugene L. Alkaline buffer for granular starch modification reaction. 3,687,728, Cl. 127-70.000.
Suetake, Kunihiro; and Naito, Yoshiyuki. Electric source filter. 3,688,224, Cl. 333-73.00c.
Sugiura, Shotaro: *See—*
Ishii, Takami; Sugiura, Shotaro; and Takikawa, Naohisa, 3,687,898.
Sugiyama, Keiji, to Pioneer Electronic Corporation. Method of manufacturing a magnetic head. 3,686,751, Cl. 29-603.000.
Sullivan, Edward F. High compression piston ring and piston assembly. 3,687,018, Cl. 92-169.000.
Sullivan, Joseph T., to Standard-Farrington Alarm & Signal Corporation. Automatic time-controlled alarm system. 3,688,293, Cl. 340-213.00r.
Sullivan, Michael F., to Eastman Kodak Company. Palladium images by hydrogen reduction. 3,687,668, Cl. 96-48.000.
Sullivan, Robert H.: *See—*
Lawrence, Frederick R.; and Sullivan, Robert H., 3,687,981.
Sullivan, William A.: *See—*
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Sun Oil Company: *See—*
Seitzer, Walter H., 3,687,838.
Sunderlin, Donald E.: *See—*
Moser, Raymond L.; Oldenburg, Dorrance; and Sunderlin, Donald E., 3,687,023.
Surface Activation Corporation: *See—*
Fydelor, Peter John; and Lovell, Keith Victor, 3,687,832.
Suss, Manfred, to Kinag GmbH. Cinematographic broad screen recording and projection method and a film cartridge for carrying out the method. 3,687,532, Cl. 352-78.00r.
Susuki, Rinnosuke; Hoshi, Hiroshi; Saito, Jiro; Murakami, Keiichi; and Hirakawa, Michio, to Lion Fat & Oil Co., Ltd. Thermoplastic resinous composition. 3,687,890, Cl. 260-41.00r.
Sutter, Robert E. Orthodontic applicator tool. 3,686,762, Cl. 32-66.000.
Suverkropp, Claus P. J., to Signetics Corporation. Lead straightener and method. 3,687,172, Cl. 140-147.000.
Suzuki, Akihisa, to Nippon Gakki Seizo Kabushiki Kaisha. Vibrato effect producing apparatus using reciprocating displacement of both record and playback heads. 3,688,054, Cl. 179-100.20r.
Suzuki, Akira; Esashi, Yoshiaki; and Nakanishi, Tsunemoto, to Tamura Electric Works Limited. Tape control apparatus of tape processing machines. 3,687,397, Cl. 242-191.000.
Suzuki, Ruuzo; Sato, Sumihisa; Okamoto, Shuji; Shinozaki, Akira; and Doi, Tatsumi, to Koneshiroku Photo Industry Co., Ltd. Control device for use in copying machines. 3,687,542, Cl. 355-28.000.
Suzuki, Takashi; and Furukawa, Hikaru, to Takeda Riken Industry Company Limited. Digital-analog converting apparatus. 3,688,301, Cl. 340-347.0da.
Svenska Rotor Maskiner Aktiebolag: *See—*
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Lundin, Stig, 3,687,224.
Swager, Carl J. Mobile spray painting machine. 3,687,371, Cl. 239-150.000.
Swartz, Jerome: *See—*
Adelson, Alexander M.; Swartz, Jerome; and Tomasulao Walter M., Jr., 3,688,066.
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Morgan, George W., 3,686,875.
Switches, Inc.: *See—*
Wolf, Walter A.; and Corn, Prentice R., 3,688,065.
Swords, Herman L. Golf swing training device. 3,687,459, Cl. 273-186.00d.
Sybron Corporation: *See—*
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Sylvania Electric Products, Inc.: *See—*
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Szabo, Gyorgy; and Toth, Sandor, to Licencia Talalmanyokat Ertekesito Vallaiat. Process for producing pliable air permeable laminar material. 3,687,775, Cl. 156-306.000.
Szatmari, Gabor. Capacitive inductive winding. 3,688,232, Cl. 336-69.000.
Sze, Morgan C.; Unger, Harold; and Bennett, Thomas M., to Lummus Company, The. Delayed coking of pyrolysis fuel oils. 3,687,840, Cl. 208-131.000.
Szymanski, Aleksander: *See—*
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Taber, David; and Raphaelian, Leo A., to Armour-Dial, Inc. Synergistic antiseptic compositions. 3,687,856, Cl. 252-107.000.
Tabor, Paul C., to Meteor Research Limited. Rod and clevis assembly. 3,687,488, Cl. 287-59.000.
Taco, Inc.: *See—*
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Tailor, John P. Gas cleaning process. 3,687,630, Cl. 423-242.000.
Takagi, Haruo; and Yamagishi, Yasuo. Apparatus for manufacturing synthetic resin tub provided with heat-shrinking property. 3,687,585, Cl. 425-71.000.
Takahashi, Isao: *See—*
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Nakamachi, Hideo; Kamiya, Kazuhide; Nishikawa, Masao; and Fujii, Shoichiro, 3,687,932.
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Tarbet, Cecil Sidney Charles, to Cecil Instruments Limited. Stepping device for rotating the table of a sample changing equipment. 3,686,960, Cl. 74-1.500.
Tarusawa, Yasutaka, to Kabushika Kaisha Suwa Seikosha. Lockable crown for waterproof watch. 3,686,883, Cl. 58-90.00b.
Tarver, Fred E.: *See—*
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Tatara, Kazuo: *See—*
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Taylor, Cecil I., to Hartridge, Leslie, Limited. Machine for machining internal surfaces of workpieces. 3,686,797, Cl. 51-34.00r.
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Termet, Pierre. Cartridge activated two part ram. 3,686,858, Cl. 60-26.100.
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Terrana, Jack D.; and Miller, Leo A., to Wellman-Lord, Inc., mesne. Process for recovering sulfur dioxide from a gas containing same. 3,687,623, Cl. 423-242.000.
Terrana, Jack D.; and Miller, Leo A., to Wellman-Lord, Inc., mesne. Process for recovering sulfur dioxide from a gas containing same. 3,687,624, Cl. 423-242.000.
Terrana, Jack D.; and Miller, Leo A., to Wellman-Lord, Inc., mesne. Process. 3,687,625, Cl. 423-242.000.
Tesoro, Giuliana C., to Stevens, J. P., & Co., Inc. Textile treating agents and methods of preparing same. 3,687,891, Cl. 260-482.00c.
Tetar, Claude R., to L'Electronique Appliquee. System for controlling deliveries of liquid products and the like. 3,688,085, Cl. 235-61.60r.
Teuschler, Hans-Joachim: *See—*
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Thibaut, Christian; and Ballini, Andre, to Regie Nationale des Usines Renault. Tool holders with controlled tool movement. 3,686,964, Cl. 74-110.000.
Thiele, Kurt; and Posselt, Klaus, to Deutsche Gold- und Silber-Scheideanstalt vormal Roessler. Basic β-thienyl compound. 3,687,945, Cl. 240-240.00r.
Thienot, Marc O.; and Verdol, Joseph A., to Atlantic Richfield Company. Copolymers of 2-phenyl allyl alcohol and butadiene, terpolymers thereof with styrene, and their preparation. 3,687,914, Cl. 260-82.100.
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Thillet, Georges, to B.V.S., Grenoble. Method of fashioning anchorage heads on metal rods. 3,686,743, Cl. 29-452.000.
Thomas, Jean Claude, to Produits Chimiques Pechiney. Polymerization in mass of ethylenic monomers and products produced thereby. 3,687,919, Cl. 260-87.100.
Thomas, Jean Claude; and Soussan, Salomon, to Produits Chimiques. Polymerization of ethylenic monomers and products thereof. 3,687,923, Cl. 260-92.80r.
Thomas, Nelson A.: *See—*
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Thomas, Vitas T.; and Lovdahl, Robert A., to Tomco, Inc. Threaded body rams. 3,687,016, Cl. 92-130.000.
Thompson, Donald O. Navigational recording aid display aid. 3,688,252, Cl. 340-24.000.
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Thomson, George A., to Bulldog Lacing Limited. Belt lacing machine. 3,686,738, Cl. 29-243.510.
Thomson, Jack, to Imperial Chemical Industries, Limited. Staple fibres for blends. 3,686,850, Cl. 57-157.00r.
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tirlemontoise": *See—*
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Toedtman, John A.; and Hornung, Elmer H. Electrical connector with insulation-piercing contact pins. 3,688,246, Cl. 339-95.00a.
Toko Kabushiki Kaisha: *See—*
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Tommaney, Joseph W.; and Preston, Jack, to Allegheny Ludlum Industries, Inc. Consumable electrode melting. 3,687,187, Cl. 164-52.000.
Topcik, Barry, to Columbian Carbon Company. Rubber compounding. 3,687,893, Cl. 260-41.500.
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Totschnig, Manfred Karl. Power transfer element with automatically acting device for the adjustment of length for maintaining readjustment of the ventilating play in the case of brakes. 3,687,243, Cl. 188-196.00d.
Totsu, Katsuyuki. Electrically operated screw driver. 3,687,179, Cl. 144-32.000.
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Treat, Lyle G.; and Hart, Porter. Separating tramp oils from oil-in-water emulsions. 3,687,845, Cl. 210-54.000.
Trepka, Robert D. Aliphatic sulfonoxyphenylureas. 3,687,998, Cl. 265-456.00a.
Trescott Company, The; division of Telesonic Packaging Corporation: *See—*
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Tsoras, John; Davis, Melvin H.; Bickel, David P.; and Starks, Karl H., Jr. Electronic temperature monitoring system. 3,688,295, Cl. 340-227.000.
Tsukuda, Kiyoshi; Kamei, Tatsya; and Ogawa, Takuzo, to Hitachi, Ltd. Multi-layer-type switch device. 3,688,164, Cl. 317-235.000.
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Turkot, Matthew E., to Hills-McCanna Company. Manually operable power actuated valve. 3,687,415, Cl. 251-89.000.
Tuvert, Allan Johan Elmer. Means for mounting a fitting at a support. 3,686,709, Cl. 16-159.000.
Tuzson, John J., to Borg-Warner Corporation. Fuel system. 3,687,121, Cl. 123-119.00r.
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Vettel, Richard. Guitar safety strap. 3,688,012, Cl. 84-327.000.
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Wangborg, Eric Adolf. Method of making a flooring unit. 3,687,773, Cl. 156-265.000.
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Watanabe, Minoru; and Takayama, Masao, to Kabushiki Kaisha Koparu. Exposure control circuitry for use in photographic camera. 3,687,027, Cl. 95-10.0ct.
Watanabe, Sadakazu; Mori, Kenichi; Yoneyama, Tsuneo; and Genchi, Hiroshi, to Tokyo Shibaura Electric Company, Ltd. Preprocessing system for pattern recognition. 3,688,266, Cl. 340-146.3ma.
Watanuki, Toshio, to Midori-Kai Co., Ltd., The, mesne. Apparatus for projecting hemispherical motion pictures. 3,687,530, Cl. 352-71.000.
Watkins, Charles H., to Universal Oil Products Company. Hydrocarbon desulfurization and sulfur recovery. 3,687,629, Cl. 25-225.00p.
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Wehren, Peter; Vollmer, Klaus; Guenther, Wolfgang; and Kick, Rolf. Method and apparatus for plattening, labeling and/or sealing filled sacks, particularly of the gusseted type. 3,687,790, Cl. 156-540.000.
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Weis, Claus Dieter; and Rochat, Alain Claude, to Ciba-Geigy Corporation. Process for the production of octahydro-1,2,4-methenopentalenyl-(5)exo-isocyanate. 3,687,996, Cl. 260-453.00p.

Weiss, Viktor, to Oesterreichisch-Amerikanische Magnesit Aktiengesellschaft. Centrifugal force separator or classifier. 3,687,286, Cl. 209-211.000.

Weitzsch, Fritz; and Walther, Erich Eduard, to U.S. Philips Corporation. Demodulator circuit for color television receiver. 3,688,019, Cl. 178-5.4he.

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Huang, Denis K., 3,687,884.

Wetzler, Justin J.: *See—*
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Wheatley, Carl Franklin, Jr., to RCA Corporation. Deflection circuit. 3,688,153, Cl. 315-27.0td.

Wheatley, Charles, to Wheatley, Charles, Company. Check valve. 3,687,155, Cl. 137-268.000.

Wheatley, Charles, Company: *See—*
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Wheeler, Mervil C., to Trescott Company, The; division of Telesonic Packaging Corporation. Heat-sealing apparatus. 3,687,789, Cl. 156-515.000.

Whirlpool Corporation: *See—*
Karklys, Joseph; and Becker, Stephen A., 3,688,170.
Lyman, John B., 3,686,890.

Whitby, Herbert C.: *See—*
Rice, Graham; Whitby, Herbert C.; and Dunn, Peter Douglas, 3,688,083.

White, Albert H., to Chandler Evans Inc. Turbine engine starting circuit. 3,686,859, Cl. 60-39.14r.

White, Albert H., to Chandler Evans, Inc. Nozzle control. 3,686,860, Cl. 60-39.250.

White, Hollis N., Jr.; and Bough, Dale E., to TRW Inc. Hydraulic pump motor. 3,687,578, Cl. 418-21.000.

Whitmer, Jeff David. Trap for drill pipe. 3,687,157, Cl. 137-527.000.

Whittemore, Maurice James, Jr., to RCA Corporation. Recorder and playback apparatus for pulse width modulated record. 3,688,025, Cl. 178-6.60r.

Whitworth, Anthony James; Tung, Stephen yi-Sun; and Hajto, Ernest Anthony. Soil grouting process. 3,686,872, Cl. 61-36.00r.

Whysong, Dale C.; and Leininger, Dale E., to General Inetics Inc. Magnetic tape file protect system. 3,688,300, Cl. 340-267.00r.

Wiczer, Max. Merchandise carts. 3,687,475, Cl. 280-36.00c.

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Distler, Harry; Widder, Rudi; Stanger, Bernd; Muellr, Alfred; Druschke, Wolfgang; Mueller, Alfred; and Druschke, Wolfgang, 3,687,886.

Wideman, Ronald H., to Kimberly-Clark Corporation. Resilient cellulosic wadding product. 3,687,797, Cl. 161-129.000.

Wiesner, Karel; and McCluskey, Jarvis G., to United States of America. 1,5-Methano-3-benzazocine derivatives. 3,687,937, Cl. 260-239.30t.

Wiesner, Paul: *See—*
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Wijard, Endel; and Odsvall, Jan, to Aktiebolaget Electrodius. Autoclave device. 3,687,635, Cl. 23-290.000.

Wikholm, Sture Sven-Olof; and Sjostrand, Carl Evert, to Stenberg-Flygt AB. Guiding device for pumps lowerable in shafts. 3,687,576, Cl. 417-424.000.

Wild Rover Corporated: *See—*
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Wilder, Robert H. Rubbish disposal installation. 3,687,177, Cl. 141-392.000.

Wilhelm, Max, to Ciba-Geigy AG. 11-Aminoaliphatic-5:10-methanodibenzo [a:d] [1:4] cycloheptadienes and the salts thereof. 3,687,936, Cl. 260-239.00b.

Wilke, George A., to Eastman Kodak Company. Package for dispensing and disposing of processing liquids in a developing apparatus. 3,687,050, Cl. 95-89.00r.

Wilkes, Donald F., to Rolamite, Incorporated. Snap action apparatus. 3,686,965, Cl. 74-100.000.

Wilkes, Donald F., to Rolamite, Incorporated. Ski bindings. 3,687,470, Cl. 280-11.35t.

Wilkinson, Thomas B., III: *See—*
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Willems, Ozef Frans; Thiers, Robrecht Julius; and Priet, Roger Alois, to Gevaert-Agfa N.V. Silver diffusion transfer process having hydroxylamine, cyclic imide and a pyrazolioinone. 3,687,662, Cl. 96-29.000.

Willetts, Elwood H. Vehicle suspension system. 3,687,478, Cl. 280-104.50r.

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Williams, David A.; Yen, Chen-Hsiung; and Harris, Calvin E., to Eastman Kodak Company. Apparatus for splicing together the overlapping ends of photographic films. 3,687,786, Cl. 156-502.000.

Williams, Earl J.; and McLain, James E., to Precision-Cincinnati, Inc. Method and means for applying O-rings. 3,686,741, Cl. 29-450.000.

Williams, Floyd B.: *See—*
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Williams, Garold H. Instant water heater. 3,687,128, Cl. 126-350.00r.

Williams, Robert J.: *See—*
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Williams, Stanley Austen. Electrode boilers. 3,688,077, Cl. 219-284.000.

Willinger, Allan H., to Metaframe Corporation. Valveless pump for an aquarium. 3,687,291, Cl. 210-169.000.

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Willows, James D., to Potlatch Forests, Inc. Edging picker. 3,687,260, Cl. 198-24.000.

Wills, Frank Eugene, to Borg-Warner Corporation. Electronic safety control system for vehicle compressors. 3,686,891, Cl. 62-158.000.

Willy, John Robert; and Blase, Emil F., to Sangamo Electric Company. Sealed casing for electrolytic capacitor with pressure relief vent. 3,688,162, Cl. 317-230.000.

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Wilson, Edward L.: *See—*
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Wilson, Henry Allen. Antifriction ball retainer and spacer. 3,687,393, Cl. 242-96.000.

Wiltshire, Arthur J., to Structural Fibers, Inc. Apparatus for forming fiber preforms. 3,687,587, Cl. 18-26.0rr.

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Winburn, Lloyd Earl; and Cunningham, Jack B.; deceased (by Cunningham, Ethel Peggy; executrix). Method and apparatus for cleaning materials. 3,687,729, Cl. 134-21.000.

Winden, Johannes Bernardus Van der, to Stork-Amsterdam N.V. Device for filling advancing carriers with containers. 3,687,259, Cl. 198-22.00r.
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Winston, Emanuel A. Twist lever toy. 3,686,790, Cl. 46-75.000.
Wintzer, Manfred, to Siemens Aktiengesellschaft. Degassing arrangement for electron beam tube including an M/C dispenser cathode. 3,688,150, Cl. 313-178.000.
Winzen Research, Inc.: *See—*
Nelson, Leroy E., 3,686,721.
Wire Technology and Machinery Co., Inc.: *See—*
Krafft, Frederic B., 3,686,908.
Wirth, Walter, to Hergeth KG Maschinenfabrik und Apparatebau. Device for opening bales of textile fibers and the like. 3,686,714, Cl. 19-80.00r.
Wiseley, Thomas D.; and Rallis, Roy, to Honeywell Inc. Magnetic transducer heads. 3,688,056, Cl. 179-100.20c.
Wisseroth, Karl; Trieschmann, Hans-Georg; Dodel, Peter; Hoehr, Lothar; Herbeck, Rudolf; and Scholl, Richard, to Badische Anilin- & Soda-Fabrik Aktiengesellschaft. Homopolymerizatica or copolymerization of vinyl chloride in the absence of solvents or dispering agents. 3,687,917, Cl. 260-85.5xa.
Wissmiller, Ivan Lee, to Chicago Bridge & Iron Company. Depressuring system for relieving tank anchor bolt load in case of fire. 3,687,149, Cl. 137-72.000.
Witt, Ludwig, to Weatherhead Company. Welding head inert gas supply. 3,688,072, Cl. 219-60.00a.
Witte, Johan F.; and De Wit, Jacobus J. Manufacture of ammonium sulfate from gypsum. 3,687,620, Cl. 423-548.0on.
Witte, Josef; Haas, Friedrich; and Marwede, Gunter, to Farbenfabriken Bayer Aktiengesellschaft. Process for preparing oil-extended rubber. 3,687,889, Cl. 260-30.600.
Witte, Robert S.; Frantz, Lee M.; and Peters, Eugene R., to TRW Inc. Laser cold cathode arrangement. 3,688,217, Cl. 331-94.500.
Witz, Dennis F., to Upjohn Company, The. Lincomycin production. 3,687,814, Cl. 195-80.00r.
Woellhaf, Josef: *See—*
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Wolf, Charles C.: *See—*
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Wolf, Rudolf Herman, to Tecumseh Products Company. Hermetic compressor discharge tube joint construction. 3,687,019, Cl. 92-169.000.
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Wolfelsperger, Robert O., to Young, William E. Apparatus and method for skin packaging. 3,686,822, Cl. 53-22.00a.
Wolverine-Pentronix, Inc.: *See—*
Smith, Joseph E., 3,687,588.
Wolzak, Willem, to Stork-Amsterdam N.V. Device for transforming the direction of movement with respect to the main line of symmetry of a row of advancing cylindrical containers. 3,687,258, Cl. 198-20.00r.
Wood, George A.: *See—*
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Woods Research and Development Corporation: *See—*
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Woolcock, Alan; McDougall, Ian Leich; and Barber, Anthony Clifford. Method of fabricating a superconducting composite. 3,686,750, Cl. 29-599.000.
Woole, Cyril; and Michael, Richard O., to Allied Chemical Corporation. Process for the production of sulfuryl fluoride. 3,687,626, Cl. 423-468.000.
Wortman, Stephen, to Kaiser Industries Corporation. Cooling apparatus for converter. 3,687,436, Cl. 266-35.000.
Wragg, Arthur Hedley, to Fisons Limited. 6-7-Ethylenediarychromone-2-carboxylic acid and derivatives thereof. 3,687,979, Cl. 260-340.300.
Wright, Daniel James. Obster tank including heat exchange means. 3,687,193, Cl. 165-161.000.
Wright, Franklin J., to Esso Research and Engineering Company. Process for the preparation of cyclic sulfides. 3,687,976, Cl. 260-327.00e.
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Yaguchi, Frank S. Hand-held multi-purpose tool. 3,688,139, Cl. 310-50.000.
Yamada, Keisho; Umemura, Sumio; Ohdan, Kyoji; Hidaka, Mikio; Fukuda, Kazuo; and Sawazi, Masao, to Ube Industries, Ltd. Process for producing acrylonitrile or methacrylonitrile. 3,688,002, Cl. 260-465.300.
Yamada, Shinichi: *See—*
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Yamada, Shoji; and Kawaguchi, Yoshiaki, to Yazaki Corporation. Multi-terminal connector unit. 3,688,243, Cl. 339-49.00r.
Yamagishi, Yasuo: *See—*
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Yamaha Hatsudoki Kabushiki Kaisha: *See—*
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Yamamoto, Kinya. Soundboard. 3,688,011, Cl. 84-195.000.
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Yamamoto, Tadaaki; and Kasai, Toshiyuki, to Nippon Kogaku K.K. Photoelectric polarization analyzer. 3,687,555, Cl. 356-114.000.
Yamanoto, Makoto; and Shintomi, Yukito, to Fujisoku Electric Company Ltd. Reversing mechanism of switch. 3,688,062, Cl. 200-153.00k.
Yamanouchi Pharmaceutical Co., Ltd.: *See—*
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Yamaya, Taiji; and Okada, Minoru. Brushless motor control apparatus for an electric vehicle. 3,688,169, Cl. 318-138.000.
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Yao, Shi-Kuang, to GAF Corporation. Novel tetranuclear methine dyes, processes for preparing the same, and electrophotographic systems and silver halide emulsions containing the same. 3,687,946, Cl. 260-240.100.
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Yavorsky, Paul M.; and Gorin, Everett, to Consolidation Coal Company. Conversion to formate in one stage of thiosulfate formed in removal of sulfur dioxide from gases with formate. 3,687,614, Cl. 23-2.0sq.
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Yazawa, Masahide, to Kabushiki Kaisha Kobunshi Kako Kenkyujo. Method for continuous treatment of bundles of filaments and yarns with steam. 3,687,607, Cl. 8-149.100.
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Yoneyama, Toshikazu, to Toko Kabushiki Kaisha. Inspection apparatus for magnetic wire type memory element. 3,688,283, Cl. 340-174.0tc.
Yoneyama, Tsuneo: *See—*
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Yonezu, Hisashi, to Nippondenso Kabushiki Kaisha. Control device for the cooling system of an automobile. 3,688,134, Cl. 307-310.000.
Yoshida, Hiroshi: *See—*
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Yoshida, Makoto; and Imai, Shinichi, to Fuji Photo Film Co., Ltd. Color photographic light-sensitive materials containing a cyan dye for silver dye bleaching method. 3,687,673, Cl. 96-99.000.

Yoshifumi, Saeki; and Seiichiro, Kurihara, to Pioneer Electronic Corporation. Automatic tuning device for a broadcast receiver. 3,688,199, Cl. 325-469.000.

Yoshino, Akira, to Matsushita Electric Works, Ltd. Push button type circuit protector. 3,688,234, Cl. 335-202.000.

Youmans, Arthur H., to Dresser Industries, Inc. Dual purpose radioactivity well logging detector system. 3,688,114, Cl. 250-71.500.

Young, Carter R.; and Mc Casland, Leonard, to Otis Engineering Corporation. Method and apparatus for treating wells. 3,687,202, Cl. 166-305.000.

Young, Vernon V., to Commercial Solvents Corporation. Separation of mixed diastereoisomers of zearalanol. 3,687,982, Cl. 260-343.20f.

Young, William E.: *See*—
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La Camera, Alfred F.; and Semer, Joseph R., 3,687,103.

Yurkoski, Frank R.; Coyle, Edward L.; Needham, Robert F.; and Rollins, Dallas W., to ACF Industries, Incorporated. Insulating structuer for interior of railway freight cars. 3,687,087, Cl. 105-355.000.

Zabiak, Daniel M. Photographic film titling ink. 3,687,887, Cl. 260-29.6wb.

Zaky, Amin Y.: *See*—
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Zalles, Robert I., to Yarnall Atlantic Company, Ltd., The, mesne. Self-cooling condensing apparatus and method. 3,687,821, Cl. 203-86.000.

Zally, William Joseph: *See*—
Field, George Francis; Sternbach, Leo H.; and Zally, William Joseph, 3,687,967.

Zegel, William C., to Scott Research Laboratories, Inc. Method and equipment for catalytic analysis of gases. 3,687,631, Cl. 23-232.00e.

Zenger, Richard D.; and Lewis, Albert F., to National Can Corporation. Automated handling system for articles. 3,686,820, Cl. 53-300.000.

Zhuravlenko, Viktor Yakovlevich: *See*—
Dyskin, Ernest Matveevich; Raevsky, Georgy Vladimirovich; Biletsky, Semen Mikhailovich; Burmenko, Eduard Jurievich; Grosman, Erikh Ruvimovich; Satanovsky, Abram Lazarevich; Kremnev, Oleg Alexandrovich; Zhuravlenko, Viktor Yakovlevich; and Protsyshin, BorisNikolaevich, 3,687,434.

Zielinski, James, to Esso Research and Engineering Company. Alkaryl-alkoxy, aryl-amido derivatives of pyridine. 3,687,959, Cl. 260-295.0am.

Zipper, Donald H.: *See*—
Westfall, James E.; and Zipper, Donald H., 3,687,332.

Zivkovic, Dusan, to UCB. N-Hydroxyalkyl, hydroxyalkoxyalkyl and hydroxyalkoxyalkoxy-alkyl diphenyl-methylenepiperidines. 3,687,956, Cl. 260-293.830.

Zuev, Ivan Mikhailovich; Gorsky, Anatoly Vasilievich; Medovar, Boris Izrailevich; Anenko, July Georgievich Emely; Latashi, Jury Vadimovich; and Bogachenko, Alexei Georgievich. Method of the electroslag remelting of consumable electrodes. 3,687,189, Cl. 16452.000.

Zurbuchen, Louis: *See*—
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Zurbuchen, Louis; and Novet, Hanspeter, to Werkzeugmaschinenfabrik Oerlikon Buhrle AG. Armoured turret with oval feed means. 3,687,003, Cl. 89-36.00k.

Zviak, Charles: *See*—
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LIST OF DESIGN PATENTEES

TO WHOM

PATENTS WERE ISSUED ON THE 29TH DAY OF AUGUST, 1972

NOTE.—Arranged in accordance with the first significant character or word of the name (in accordance with city and telephone directory practice).

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Anderson, Lloyd E., and G. L. Alinder, Carpet measuring gauge. 224,693, 8–29–72, Cl. D52—6.
Bechman, William H., to Westinghouse Air Brake Co. Tractor. 224,680, 8–29–72, Cl. D14—3.
Bixler, Kenneth D.: *See*—
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Cullinan, Douglas M., to Cullinan Refractories Ltd. Road marker. 224,695, 8–29–72, Cl. D73—1.
Cullinan Refractories Ltd.: *See*—
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Davis, Arnold M.: *See*—
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Diamond International Corp.: *See*—
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Duern, Gordon L., and D. S. Griffin, to Electrohome Ltd. Floor lamp. 224,690, 8–29–72, Cl. D48—20.
Duern, Gordon L., and D. S. Griffin, to Electrohome Ltd. Table lamp. 224,691, 8–29–72, Cl. D48—20.
Dunphy, James J. Fishing pole holder. 224,681, 8–29–72, Cl. D22—22.
Electrohome Ltd.: *See*—
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Duern, Gordon L., and Griffin. 224,691.
Gielda, Charles J. Boblet. 224,689, 8–29–72, Cl. D36—8.
Gray, Laverne E., to Lone Star Container Corp. Package dispensing container. 224,692, 8–29–72, Cl. D52—2.
Griffin, Donald S.: *See*—
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Duern, Gordon L., and Griffin. 224,691.
Grob, Curt H., Jr. Dwelling. 224,679, 8–29–72, Cl. D13—1.
Hoff, Thayer J. Animal shelter for a dog or the like. 224,684, 8–29–72, Cl. D30—1.
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Pawsat, Carlton P., and Humlong. 224,696.
Pawsat, Carlton P., and Humlong. 224,697.
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Jeckel, Norman C. Webbed horseshoe. 224,687, 8–29–72, Cl. D30—35.
Lahey, Donald F.: *See*—
Bixler, Loring C., Davis, Lahey, McCormick, and Wiener. 224,682.
Lehnhard, John A., to Sears, Roebuck and Co. Wrench. 224,677, 8–29–72, Cl. D8—28.
Lone Star Container Corp.: *See*—
Gray, Laverne E. 224,692.
McCormick, Walter S., Jr.: *See*—
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McDowell, William W., III. Font of type. 224,694, 8–29–72, Cl. D64—12.
Meserve, Don J., to Colonial Knife Co., Inc. Handle member for a folding pocket knife or the like. 224,676, 8–29–72, Cl. D8—99.
Michlap, Dewitt A., and J. D. Wright. Pet house. 224,685, 8–29–72, Cl. D30—1.
Michlap, Dewitt A., and J. D. Wright. Pet house. 224,686, 8–29–72, Cl. D30—1.
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Pawsat, Carlton P., and R. F. Humlong, to Wald Mfg. Co., Inc. Handlebar. 224,696, 8–29–72, Cl. D90—11.
Pawsat, Carlton P., and R. F. Humlong, to Wald Mfg. Co., Inc. Bicycle handlebar. 224,697, 8–29–72, Cl. D90—11.
Pawsat, Carlton P., and R. F. Humlong, to Wald Mfg. Co., Inc. Bicycle Handlebar. 224,698, 8–29–72, Cl. D90—11.
Pawsat, Carlton P., and R. F. Humlong, to Wald Mfg. Co., Inc. Bicycle handlebar. 224,699, 8–29–72, Cl. D90—11.
Pioneer Electronic Corp.: *See*—
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Reifers, Richard F., and K. D. Bixler, to Diamond International Corp. Molded packaging tray for meat or the like. 224,678, 8–29–72, Cl. D9—219.
Schneider, Helmut B. Bobsled. 224,688, 8–29–72, Cl. D34—15.
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Wald Mfg. Co., Inc.: *See*—
Pawsat, Carlton P., and Humlong. 224,696.
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LIST OF DESIGN PATENTEES

PATENTS WERE ISSUED ON THE 29TH DAY OF AUGUST, 1972

CLASSIFICATION OF PATENTS

ISSUED AUGUST 29, 1972

NOTE.—First number, class; second number, subclass; third number, patent number

CLASS 2

2	3,686,689
9	3,686,690
132	3,686,692
209	3,686,691

CLASS 4

10	3,686,693
172.19	3,686,694
252R	3,686,695

CLASS 5

63	3,686,696
152	3,686,697

CLASS 8

23	3,687,603
127.51	3,687,606
127.6	3,687,604
	3,687,605
149.1	3,687,607

CLASS 13

1	3,688,006
20	3,688,007

CLASS 15

50R	3,686,699
104.93	3,686,701
167R	3,686,700
210B	3,686,702
235.4	3,686,703
250.01	3,686,704
	3,686,705
250.16	3,686,706
385	3,686,707

CLASS 16

51	3,686,708
112	3,686,710
125	3,686,711
159	3,686,709

CLASS 17

44.1	3,686,712
52	3,686,713

CLASS 19

80R	3,686,714

CLASS 21

2.5	3,687,608
	3,687,609
2.7	3,687,610
	3,687,611
58	3,687,612

CLASS 23

232E	3,687,631
259	3,687,632
273SP	3,687,633
273R	3,687,636
281	3,687,634
288F	3,687,637
290	3,687,635
296	3,687,638
300	3,687,639
313	3,687,640

CLASS 24

68CD	3,686,715
73CM	3,686,716
73PF	3,686,717
204	3,686,718
205.11F	3,686,719
230	3,686,720
243K	3,686,721

CLASS 28

1.2	3,686,724
1.3	3,686,722
1.8	3,686,723
74H	3,686,726
74R	3,686,725

CLASS 29

25.16	3,686,727
96	3,686,728
	3,686,729
113AD	3,686,730
132	3,686,731
157C	3,686,732
157.1R	3,686,733
160.6	3,686,734
182.2	3,687,643
205R	3,686,735
207	3,686,736
238	3,686,737
243.51	3,686,738
274	3,686,739
439	3,686,740
441	3,686,742
450	3,686,741
452	3,686,743
456	3,686,744
471.1	3,686,745
488	3,686,746
508	3,686,747
577	3,686,748
598	3,686,749
599	3,686,750
603	3,686,751
628	3,686,752

CLASS 30

90.8	3,686,753

CLASS 32

14A	3,686,758
14D	3,686,757
17	3,686,754
	3,686,759
	3,686,760
19	3,686,761
32	3,686,755
43	3,686,756
66	3,686,762

CLASS 33

1C	3,686,761
19A	3,686,763
97	3,686,765
138	3,686,767
166	3,686,766
185R	3,686,768
	3,686,769
193	3,686,770

CLASS 34

44	3,686,771
154	3,686,772
203	3,686,773
227	3,686,774

CLASS 35

11	3,686,775
	3,686,776
17	3,688,008

CLASS 36

2.5AL	3,686,778
2.5B	3,686,777
2.5W	3,686,779

CLASS 40

104.14	3,686,780
137	3,686,781
152	3,686,782
152.1	3,686,783
159	3,686,784

CLASS 42

42	3,686,786

CLASS 43

15	3,686,785
44.9	3,686,787
110	3,686,788

CLASS 44

56	3,687,644
63	3,687,645

CLASS 46

43	3,686,789
75	3,686,790

CLASS 47

34.12	3,686,791
39	3,686,792

CLASS 48

209	3,687,646

CLASS 49

131	3,686,793
141	3,686,794
345	3,686,795

CLASS 51

3	3,686,796
34K	3,686,797
138	3,686,798
181R	3,686,799
206R	3,686,800
215R	3,686,801
309	3,687,647

CLASS 52

3	3,686,820
15	3,686,802
18	3,686,803
31	3,686,804
64	3,686,805
71	3,686,807
83	3,686,816
187	3,686,806
211	3,686,808
223	3,686,809
	3,686,811
243	3,686,810
274	3,686,812
303	3,686,813
456	3,686,814
586	3,686,817
646	3,686,818
693	3,686,819
743	3,686,815

CLASS 53

21FC	3,686,821
22A	3,686,822
22B	3,686,823
381A	3,686,824

CLASS 55

5	3,686,825
52	3,686,826
74	3,686,827
90	3,686,828
147	3,686,829
179	3,686,832
199	3,686,831
228	3,686,833
233	3,686,830
268	3,686,834
270	3,686,835
467	3,686,836
487	3,686,837

CLASS 56

10.2	3,686,838
11.6	3,686,839
15.8	3,686,840
17.5	3,686,841
330	3,686,842

CLASS 57

12	3,686,843
34HS	3,686,845
	3,686,846
34R	3,686,844
52	3,686,847
77.42	3,686,853
106	3,686,854
140R	3,686,848
145	3,686,855
152	3,686,849
157R	3,686,850

CLASS 58

14	3,686,851
21.15	3,686,852
21.155	3,686,878
38	3,686,879
39.5	3,686,880
76	3,686,881
85.5	3,686,885
90B	3,686,883
90R	3,686,882
127R	3,686,884

CLASS 60

6	3,686,856
23	3,686,857
26.1	3,686,858
39.14R	3,686,859
39.25	3,686,860
51	3,686,861
52HE	3,686,862
54.5HA	3,686,865
54.5E	3,686,864
54.5R	3,686,863
54.6R	3,686,866
94	3,686,867
200A	3,686,868

CLASS 61

1F	3,686,869
	3,686,870
9	3,686,871
36R	3,686,872
39	3,686,873
45D	3,686,874
46	3,686,875
46.5	3,686,886
48	3,686,876
63	3,686,887
63.5	3,686,877
72.1	3,686,888

CLASS 62

62	3,686,889
67	3,686,890
158	3,686,891
	3,686,892
402	3,686,893

CLASS 63

19	3,686,894

CLASS 64

1V	3,686,895
4	3,686,896

CLASS 65

25A	3,687,648
30	3,687,649
45	3,687,650
161	3,687,651

CLASS 66

86	3,686,897
149R	3,686,898

CLASS 68

3R	3,686,899
5D	3,686,902
	3,686,903
5E	3,686,900
	3,686,904
15	3,686,901
62	3,686,905

CLASS 70

252	3,686,906

CLASS 71

1	3,687,652
94	3,687,653

CLASS 72

6	3,686,907
43	3,686,908
56	3,686,909
60	3,686,910
69	3,686,911
70	3,686,912
97	3,686,913
114	3,686,914
	3,686,915
187	3,686,917
198	3,686,916
	3,686,918
249	3,686,919
302	3,686,921
396	3,686,952
399	3,686,920
441	3,686,922

CLASS 73

23.1	3,686,923
	3,686,930
53	3,686,924
57	3,686,931
61R	3,686,925
	3,686,926
67.5R	3,686,932
71.6	3,686,927
101	3,686,933
112	3,686,935
117.3	3,686,941
141R	3,686,939
146	3,686,928
150	3,686,940
151	3,686,942
	3,686,943
180	3,686,936
182	3,686,944
189	3,686,937
	3,686,938
208	3,686,945
213	3,686,946
229	3,686,929
	3,686,947
230	3,686,948
354	3,686,949
379R	3,686,950
388R	3,686,951
401	3,686,953
406	3,686,958
432R	3,686,954
	3,686,959
457	3,686,955
462	3,686,956

CLASS 74

1.5	3,686,960
7R	3,686,961
25	3,686,962
63	3,686,963
100	3,686,965
110	3,686,964
230.17M	3,686,966
371	3,686,957
388R	3,686,967
410	3,686,968
424.8VA	3,686,969
479	3,686,970
597	3,686,971
602	3,686,972
606	3,686,973
665GA	3,686,974
711	3,686,976
751	3,686,975
759	3,686,977
801	3,686,978
813C	3,686,979

CLASS 75

.5BA	3,687,654
24	3,687,655
74	3,687,656
212	3,687,657

CLASS 76

4	3,686,980
36	3,686,981

CLASS 81

9.5R	3,686,982
52.4	3,686,983
64	3,686,984
90A	3,686,985

CLASS 82

30	3,686,986

CLASS 83

37	3,686,987
300	3,686,988
320	3,686,989
409	3,686,990
482	3,686,991
551	3,686,992

CLASS 84

1.03	3,688,009
1.11	3,688,010
195	3,688,011
312	3,686,993
327	3,688,012
345	3,686,994
389	3,686,995
422	3,688,013
464	3,686,996

CLASS 86

1	3,686,934

CLASS 87

57	3,686,997

CLASS 89

1K	3,686,998
1R	3,686,999
14E	3,687,000
24	3,687,001
33D	3,687,004
33E	3,687,002
36K	3,687,003
41R	3,687,005

CLASS 90

7	3,687,006
12	3,687,007

CLASS 91

25	3,687,008
37	3,687,009
262	3,687,010
459	3,687,011
507	3,687,012

CLASS 92

8	3,687,013
33	3,687,014
53	3,687,015
130	3,687,016
165	3,687,017
169	3,687,018
	3,687,019

CLASS 93

35H	3,687,020

CLASS 94

9	3,687,021
18	3,687,022
50PR	3,687,023

CLASS 95

1.1	3,687,024
4.5	3,687,025
10CT	3,687,026
	3,687,027
	3,687,029
11R	3,687,028
	3,687,031
11	3,687,030
11.5R	3,687,033
	3,687,034
12.5	3,687,035
13	3,687,032
31AC	3,687,039
31R	3,687,036
	3,687,037
36R	3,687,040
42	3,687,038
44C	3,687,041
53EA	3,687,042
53E	3,687,043
57	3,687,044
59	3,687,045
63	3,687,046
64D	3,687,047
86	3,687,048
89R	3,687,049
	3,687,050
	3,687,051

CLASS 96

1R	3,687,658
1.2	3,687,661
1.5	3,687,659
3	3,687,660
29	3,687,662
33	3,687,663
35.1	3,687,664
36	3,687,665
48R	3,687,666
	3,687,667
48	3,687,668
66.3	3,687,669
84R	3,687,671
84	3,687,670
90PC	3,687,672
99	3,687,673
101	3,687,674
	3,687,675
108	3,687,676
109	3,687,677
122	3,687,678

CLASS 98

32	3,687,052
33	3,687,053
	3,687,054
40DL	3,687,056
40D	3,687,055
105	3,687,057

CLASS 99

1	3,687,679
4	3,687,680
56	3,687,681
57	3,687,682
71	3,687,683
79	3,687,684
80R	3,687,685
83	3,687,686
	3,687,687
100P	3,687,688
109	3,687,689
134G	3,687,690
134R	3,687,691
140R	3,687,692
141	3,687,693
257	3,687,058

CLASS 100

4 3,687,059
53 3,687,060
65 3,687,061
91 3,687,062
98 3,687,063
100 3,687,064
117 3,687,065
214 3,687,066
218 3,687,067
255 3,687,068
257 3,687,069
271 3,687,070

CLASS 101

93C 3,687,071
153 3,687,072
350 3,687,073

CLASS 102

22 3,687,074
23 3,687,075
24 3,687,076
40 3,687,077
42C 3,687,078
49.2 3,687,079
101 3,687,080

CLASS 104

12 3,687,081
152 3,687,082
155 3,687,083

CLASS 105

4R 3,687,084
171 3,687,085
197DB 3,687,086
355 3,687,087

CLASS 106

2 3,687,694
3 3,687,695
15FP 3,687,696
53 3,687,697
125 3,687,698

CLASS 108

2 3,687,088
3,687,089
6 3,687,090
60 3,687,091
156 3,687,092

CLASS 110

1A 3,687,093
8R 3,687,094

CLASS 112

79R 3,687,095
206 3,687,096
210 3,687,097

CLASS 113

15A 3,687,099
120R 3,687,098

CLASS 114

126 3,687,100

CLASS 115

18B 3,687,101

CLASS 117

4 3,687,699
5.1 3,687,700
6 3,687,701
16 3,687,702
3,687,703
17 3,687,704
3,687,705
18 3,687,706
34 3,687,707
37LE 3,687,708
64C 3,687,711
64R 3,687,709
64 3,687,710
68 3,687,712
68.5 3,687,714
71R 3,687,713
76R 3,687,715
93.1GD 3,687,716
100A 3,687,717
106A 3,687,718
132BF 3,687,719
137 3,687,720
138.8F 3,687,721
212 3,687,722
222 3,687,723
230 3,687,724
234 3,687,726
235 3,687,725

CLASS 118

2 3,687,102
63 3,687,103
405 3,687,104
3,687,105
621 3,687,106
637 3,687,107
3,687,108
3,687,109

CLASS 119

1 3,687,110
2 3,687,111
29 3,687,112
82 3,687,113
106 3,687,114

CLASS 122

4D 3,687,115
356 3,687,116

CLASS 123

27GE 3,687,119
43A 3,687,117
73R 3,687,118
117A 3,687,120
119R 3,687,121
122G 3,687,122
148E 3,687,123
182 3,687,124

CLASS 126

38 3,687,125
91A 3,687,126
215 3,687,127
350R 3,687,128

CLASS 127

47 3,687,727
70 3,687,728

CLASS 128

1R 3,687,129
2B 3,687,131
2.08 3,687,130
5 3,687,132
58 3,687,133
76.5 3,687,134
92B 3,687,135
156 3,687,136
188 3,687,137
269 3,687,140
288 3,687,141
326 3,687,138
348 3,687,142
361 3,687,139
402 3,687,143

CLASS 134

21 3,687,729
3,687,730
22R 3,687,731
25A 3,687,732
25R 3,687,733
79 3,687,144
114 3,687,145

CLASS 135

26 3,687,146

CLASS 136

134R 3,687,734
153 3,687,735

CLASS 137

1 3,687,147
13 3,687,148
72 3,687,149
81.5 3,687,150
101.21 3,687,151
112 3,687,153
115 3,687,152
116 3,687,154
268 3,687,155
334 3,687,156
527 3,687,157
551 3,687,158
563 3,687,159
599.1 3,687,160
614 3,687,161
625.11 3,687,163
625.41 3,687,162
625.43 3,687,164

CLASS 138

30 3,687,165
94 3,687,166
109 3,687,167
3,687,168
134 3,687,169
143 3,687,170

CLASS 139

12 3,687,171

CLASS 140

147 3,687,172

CLASS 141

1 3,687,173
20 3,687,174
59 3,687,175
3,687,176
392 3,687,177

CLASS 143

157E 3,687,178

CLASS 144

32 3,687,179

CLASS 146

255 3,687,180

CLASS 148

2 3,687,737
6.14R 3,687,741
6.2 3,687,738
3,687,739
3,687,740
12 3,687,736
113 3,687,742
171 3,687,743
175 3,687,744
187 3,687,745

CLASS 149

19 3,687,746
77 3,687,747

CLASS 151

14R 3,687,181
21B 3,687,182
22 3,687,183
37 3,687,184

CLASS 156

56 3,687,748
62.4 3,687,749
63 3,687,750
64 3,687,751
72 3,687,752
3,687,753
3,687,754
89 3,687,755
111 3,687,756
126 3,687,757
132 3,687,758
167 3,687,759
172 3,687,760
173 3,687,761
175 3,687,762
3,687,763
179 3,687,764
187 3,687,765
209 3,687,766
210 3,687,767
212 3,687,768
219 3,687,769
221 3,687,770
232 3,687,771
242 3,687,772
265 3,687,773
306 3,687,775
3,687,776
308 3,687,777
324 3,687,774
392 3,687,778
401 3,687,779
403 3,687,780
412 3,687,781
425 3,687,782
436 3,687,783
500 3,687,784
501 3,687,785
502 3,687,786
507 3,687,787
510 3,687,788
515 3,687,789
540 3,687,790
549 3,687,791

CLASS 160

1 3,687,185
188 3,687,186

CLASS 161

. 4 3,687,792
5 3,687,793
3,687,794
47 3,687,795
67 3,687,796
129 3,687,797
156 3,687,798
162 3,687,800
164 3,687,799
184 3,687,801

CLASS 162

74 3,687,803
198 3,687,802

CLASS 164

52 3,687,187
3,687,188
3,687,189
87 3,687,190
258 3,687,191

CLASS 165

8 3,687,192
161 3,687,193
180 3,687,194

CLASS 166

.5 3,687,195
217 3,687,196
272 3,687,197
274 3,687,198
3,687,199
275 3,687,200
3,687,201
305 3,687,202
308 3,687,203

CLASS 174

7 3,688,014
16B 3,688,015
36 3,688,016
46 3,688,017
68.5 3,688,018

CLASS 175

9 3,687,204
27 3,687,205
50 3,687,206
410 3,687,207

CLASS 176

50 3,687,804
78 3,687,805

CLASS 177

207 3,687,208
233 3,687,209

CLASS 178

5.4HE 3,688,021
5.4ST 3,688,020
3,688,022
3,688,023
5.4SY 3,688,019
5.4F 3,688,024
6.5 3,688,045
6.6R 3,688,025
6.7 3,688,026
6.8 3,688,027
3,688,028
3,688,029
3,688,030
7.5R 3,688,031
7.6 3,688,032
15 3,688,033
30 3,688,034
33R 3,688,035
68 3,688,036
69.5TV 3,688,037
88 3,688,039

CLASS 179

1C 3,688,041
6R 3,688,042
3,688,043
3,688,044
6 3,688,046
7.1R 3,688,047
15AQ 3,688,049
15BW 3,688,048
17A 3,688,050
18GF 3,688,051
82 3,688,052
84R 3,688,038
100.2RE 3,688,054
100.2C 3,688,056
100.2D 3,688,057
100.2Z 3,688,055
3,688,058
3,688,059
107E 3,688,053
167 3,688,040

CLASS 180

1R 3,687,227
6.44 3,687,210
9.5 3,687,226
14B 3,687,211
66R 3,687,212
82 3,687,213
111 3,687,214
3,687,215
114 3,687,216
120 3,687,217

CLASS 181

.5FS 3,687,218
.5XC 3,687,228
3,687,229
.5R 3,687,219
31B 3,687,220
3,687,221
33HC 3,687,222
33A 3,687,224
33G 3,687,223
36C 3,687,225

CLASS 184

1.5 3,687,230
6.18 3,687,233
6.5 3,687,231
6.8 3,687,232

CLASS 187

25 3,687,234
29R 3,687,235
3,687,236
73 3,687,237

CLASS 188

32 3,687,238
43 3,687,239
71.1 3,687,240
74 3,687,241
181C 3,687,242
196D 3,687,243
218A 3,687,244
314 3,687,245
329 3,687,246
335 3,687,247

CLASS 192

3.54 3,687,248
4R 3,687,249
12D 3,687,250
18B 3,687,252
46 3,687,251
91A 3,687,253
105A 3,687,254

CLASS 194

1N 3,687,255

CLASS 195

1.8 3,687,806
11 3,687,807
28N 3,687,808
29 3,687,809
3,687,810
30 3,687,811
31R 3,687,812
51R 3,687,813
80R 3,687,814
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	99	224,676	D22—	22	224,681			224,685	D36—	8	224,689		6	224,693			224,697
D 9—	219	224,678	D26—	5	224,682			224,686	D48—	20	224,690	D64—	12	224,694			224,698
D13—	1	224,679		14	224,683		35	224,687			224,691	D72—	1	224,695			224,699

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(First number in listing denotes location according to above key. Refer to patent number in body of the Official Gazette to obtain details as to inventor name, location, etc.)

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